Volume 5
Issue 8

RISC USER

July 1992
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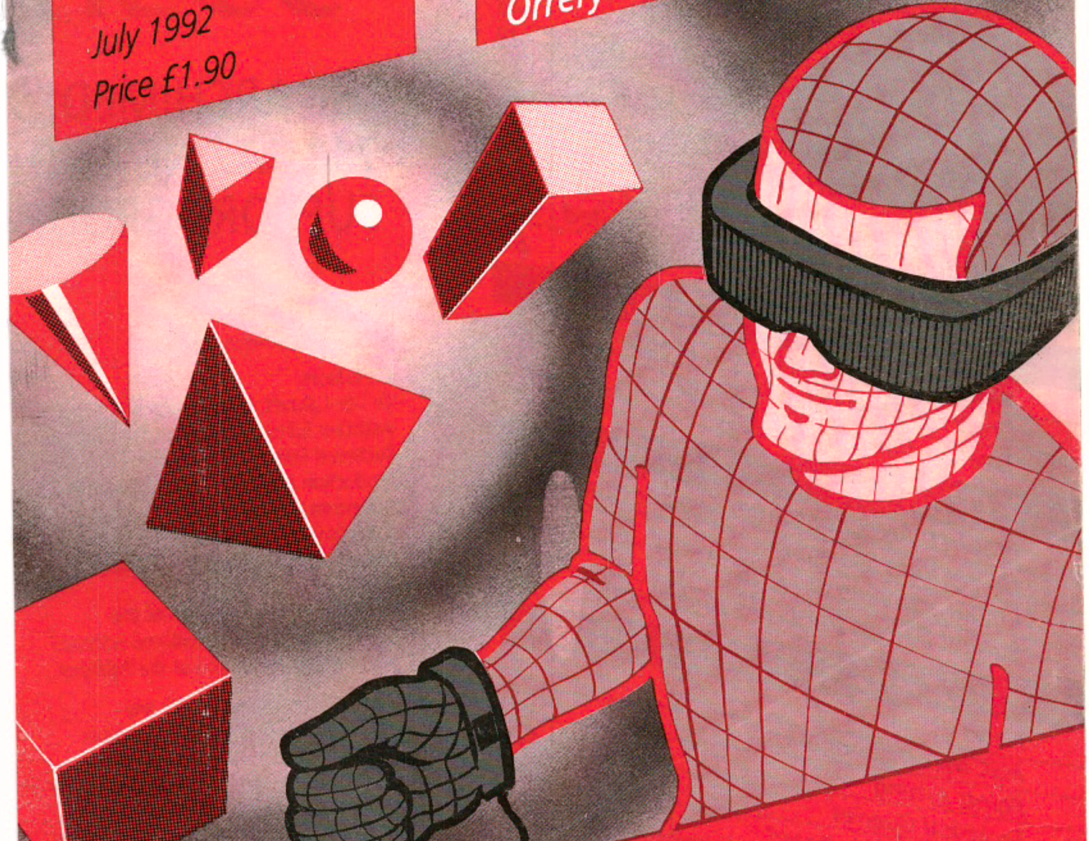
Auto-Booting the Desktop

MouseTrap: Confining your Mouse

Prophet: Accounting from Apricote

Orrery from Spacetech



Virtual Reality Explored

The magazine and
support group
exclusively for users
of the Archimedes

EDITORIAL

Promoting Acorn

I seem to have received a number of letters from readers recently, all containing criticism of Acorn in one form or another. I don't know whether other computer companies suffer in the same way, but Acorn seems often to have been singled out over the years and critised on many counts. Even Acorn would, I am sure, accept that wrong decisions have been made from time to time, but I doubt any company makes all of the right decisions all of the time, and I am sure that the individuals who work for Acorn all endeavour to perform their tasks to the best of their ability.

However, there has been one common theme which has arisen in correspondence, which seems worth raising more publicly, as it seems to follow on from the comments I made in last month's editorial. What these readers are finding is that when talking with colleagues and other professionals about computing needs there appears to be a widespread ignorance of the existence of Acorn, its computers and what they are capable of. The complaint is expressed in terms of, "Why do Acorn rely so heavily on existing users to sell their systems for them. Why don't they advertise their machines themselves?"

Now I am sure, from my own experience, that all computer manufacturers rely on existing (and hopefully satisfied and enthusiastic) users to promote their name. After all, this is why many computer manufacturers are so prepared to subsidise computers in education, particularly at polytechnic and university where future decision makers can be neatly targetted.

However, it does seem to be the case that this indirect selling is backed up by substantial direct advertising such that the brand name and what it stands for will be widely known and respected. Maybe Acorn do advertise in specific markets, but I think those RISC User readers are right in one respect: we do need Acorn to promote themselves more vigorously and more widely (and more effectively). If that were to happen then I am sure that most users would be only too happy to extol the virtues of the Acorn Archimedes range to all who would listen.

RISC User

RISC User relies very much on the efforts of contributors for the material which we publish in the magazine and on the magazine disc - our thanks to all who have contributed in the past. At the present time, we are looking for new material on word processing/desktop publishing, and on the PC Emulator/MS-DOS. If you have useful experience or knowledge in any of these fields which may be of benefit and interest to other readers then we would like to hear from you. Remember that we pay for all material published.

As readers will know, RISC User is published ten times a year. Previously, we have published a joint July/August issue (as well as a January/February issue). This year we have changed the summer arrangements to publish a July issue followed by a joint August/September issue (which will appear at the beginning of August).

There will be no change at all in the number of issues each subscriber receives, but some readers may notice a change to the expiry date on their address labels.
M.W.

Late News - Acorn Laptop Launched

As we go to press we learn that Acorn are about to launch the long awaited Acorn laptop computer. This is expected to be a full RISC OS system, in a portable case. We have prepared a special supplement to accompany this issue which will give full details of this exciting new development from Acorn. As a result, despatch of this issue has been a little delayed.

ISSUE
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ARCMARK NOT KIDS' STUFF

ArcMark is a computerised teacher's markbook, marketed by KidsRAM of Australia. The application, written by Eureka Software, allows the entry, manipulation and printing of sets of students' assessment marks. The application was still in pre-release form at the time of writing, and was only available in RISC OS compatible form (i.e. not multi-tasking), but KidsRAM are confident that a RISC OS compliant version will be available towards the end of June. The projected price is £57.00 for a single user version and £115.00 for a site licence (prices include p&p), and further details can be obtained from KidsRAM, 241 Hawkesbury Road, Winmalee, NSW 2777, Australia, tel. (+047) 543413.

NEW VERSION OF INTERACTER

Interacter, the portable Fortran user-interface/graphics subroutine library from Interactive Software Services, has been upgraded to version 1.60. It allows menus, forms, text windows and high resolution graphics to be added to Fortran software in a system independent manner. It is available for RISC OS and RISC iX, as well as DOS, VMS, PRIMOS and various Unix systems. Interacter now includes an Xlib driver for workstation consoles and X terminals. The RISC OS version is now totally mode independent, and there are several new features including pie chart support, arc fill primitives, browsing text windows, HP DeskJet 500C support and four new protected mode implementations of DOS (which overcome the 640K DOS memory limit). The RISC iX version of Interacter costs £950 plus VAT for a two developer licence (just £570 plus VAT for educational users), and the RISC OS single user version costs £195 plus VAT (£146.25 plus VAT for an educational licence). Contact ICS at 25 St Michael's Close, Penkridge, Stafford ST19 5AD, tel. (0785) 715588, fax (0785) 714913.

I DESIGN THEREFORE I CAD

G-Soft, a software company hailing from Germany, has released its CAD package *G-Draft* for the entire RISC OS range of computers. The application is for technical

PINEAPPLE ANTI-VIRUS SERVICE

Pineapple Software has introduced a new service for all Archimedes owners to help combat the growing problem of viruses. The service, which started on 1st May, works in the following ways:

- Annual registration costs £24.00 plus VAT, for which customers will receive a disc containing details of all known Archimedes viruses, as well as software developed under licence from Acorn (the Killer and VProtect software featured on last April's magazine disc). Further discs will be sent out as new viruses are discovered, and in the case of a particularly damaging virus appearing, an inoculation disc will be sent out immediately.
- Pineapple will act as a central point for collecting information about new viruses. Any Archimedes users who believe they are suffering from a new virus should send full details to Pineapple.
- In extreme cases of infection, Pineapple offer an 'on site' cure to customers, although the cost of this has to be arranged individually.

Pineapple Software would like to stress that it is not trying to make a profit out of the virus situation, and has calculated a cost that will just cover the cost of running the service. Contact Pineapple at 39 Brownlea Gardens, Seven Kings, Ilford, Essex IG3 9NL, tel. 081-599 1476, fax 081-598 2343.

CRADDOCK MODULARISE MEMORY

Craddock Computer Systems has announced a modular memory upgrade system for the A5000. The modular design allows the user to upgrade from 2Mb to 4Mb, 4Mb to 8Mb, 8Mb to 12Mb and 12Mb to 16Mb as and when more memory is required. The 2Mb to 4Mb board costs £110 plus VAT and is available at the time of writing. The board is constructed using a high quality four layer board and utilises surface mount technology, and the upgrade simply plugs vertically in to the socket inside the A5000, without requiring removal of the backplane or hard disc. The upgrades from 4-8Mb, 8-12Mb and 12-16Mb cost £425, £275 and £275 respectively (not including VAT), and should be available by the time you read this. Because the MEMC chip must be removed from the A5000 mother board for these three upgrades, your machine must be sent to CCS to have the memory fitted; courier collection, delivery and fitting charges are all included in the upgrade prices. CCS is at 20 Osyth Close, Brackmills Industrial Estate, Northampton NN4 0DY, tel. (0604) 760991, fax (0604) 761800.

MINERVA CHEW THE CAD

Minerva has released details of a new multi-tasking Computer Aided Design (CAD) package that operates in a fully RISC OS compliant manner. *CADet* is suitable as an educational tool or as an introduction to CAD, and has such features as HPGL plotter support for sizes up to A3 (as well as the ability to print via the standard RISC OS printer drivers), multiple drawings, auto dimensioning, a user defined symbol library and architectural and ordnance survey fills. CADet costs £149 plus VAT and a site licence is also available.

Minerva has also upgraded its *PrimeArt* package by including an option to use the high resolution mode 21. In addition, the package supports use of the Concept Keyboard, and there have been a couple of features added to enable children to use the package more easily. There is also an application, available separately for £12 plus VAT, that enables rolling displays to be produced from PrimeArt pictures. PrimeArt costs £79.95 plus VAT (which includes a Primary or Special Needs School licence), and existing users can upgrade their software by sending their original disc together with a payment for £10 plus VAT to Minerva Software at Minerva House, Baring Crescent, Exeter EX1 1TL, tel. (0392) 437756, fax (0392) 421762.

ACORN STAY UP AND GO DOWN UNDER

Acorn's financial statements for the second half of 1991 show that the company returned to profitability over the year and the company's overdraft of £6.5M was improved to a cash balance of £1.4M. The second half of 1991 produced a net profit of £694,000, balancing out a net loss of £420,000 in the first half of the year. The revenue for the year of £40.9M was down on last year's £45.1M, reflecting the impact of the recession, but improved gross margins and operating expenses control produced an operating profit of £1.0M.

Both the Australia and New Zealand end of Acorn operations increased their market share, and Acorn Australia has established an Acorn Education Centre in each state capital city. ARM Ltd., the company founded by Acorn, Apple and VLSI Technology, is performing well as an independent company, and GEC Plessey Semiconductors has started to produce ARM chips as well as VLSI. To cap it all, Acorn has received the Queen's Award for Technological Achievement for the design and development of the ARM 32-bit processor, an award it first received for the BBC micro in 1983.

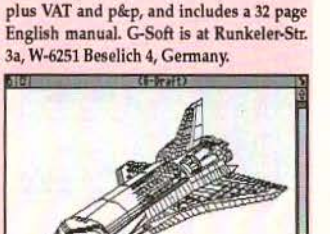
APPLE CHOOSE ARM FOR NEW PRODUCT

Apple has chosen Acorn's ARM 610, a 20MHz RISC chip that runs at 15 MIPS, to be the central processor in its latest product. The Newton personal digital assistant (PDA) is effectively a portable computer notebook, with a 3" x 5" screen and a flat pen-like writing device. Apple says that the Newton will form the core of the company's first major new product line since the Macintosh was introduced in 1984, and electronics giant Sharp has been licensed to manufacture Newtons for the consumer market while Apple concentrates on business consumers. Newton tries to be different from normal portable organisers by being intelligent so, for example, if you wrote down "Jane, Thursday lunch", then Newton would assume that you wanted to meet Jane this Thursday at around 1pm, and it would then enter this into your diary. This can only be good news for Acorn and ARM Ltd. (who developed the chip), and if the Newton takes off when it is available early next year (at between $700 and $1000), there could be important repercussions for Acorn owners.

BIRDTECH FLY TO THE RESCUE

If you need to scan something in colour, or print a document on a colour printer, then buying the necessary hardware is expensive. Birdtech is offering affordable services to those who cannot justify the price, and will scan and print files for you. For more information telephone Roy Robinson on (0263) 70669 between 9am and 9pm, or write to Birdtech, 16 Weynor Gardens, Kelling, Holt, Norfolk NR25 7EQ.

drawing, and output can be to an HPGL plotter driver, or to standard Draw files which can be printed via the normal RISC OS printer drivers. The application claims to have a very fast redraw speed, and features include interactive work on up to 8 layers/drawings; disc library for symbols; input of HPGL files from other computers; a maximum drawing size bigger than A0; and automatic dimensioning in three types including tolerances. G-Draft costs £80 plus VAT and p&p, and includes a 32 page English manual. G-Soft is at Runkeler-Str. 3a, W-6251 Beselich 4, Germany.



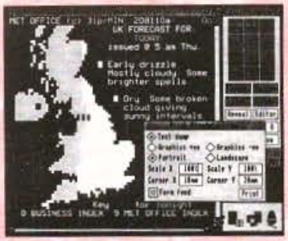
Silicon Vision has announced new versions of its CAD and graphics software. *SolidTOOLS*, *SolidCAD*, *FilmMaker* and the *Realtime Solids Modeller* are all up to version 4.0, and cost £149.95, £375.00, £99.95 and £195.00 respectively, inc. VAT and p&p. The additions include the ability to create 24-bit RGB data in addition to the standard 8-bit colour format, and a feature to allow the mapping of full screen textures onto surfaces. SolidCAD now includes support for Draw files, which allows more integration with other graphical packages. *SolidsRENDER* has been upgraded to version 2.0 with enhanced image quality, costing £149.95 inc. VAT and p&p. For details of upgrade costs, contact Silicon Vision at Signal House, Lyon Road, Harrow, Middlesex HA1 2AG, tel. 081-861 2173, fax 081-427 5169.

KEEP TAKING THE TABLETS

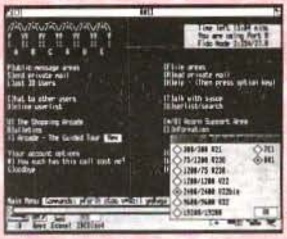
TechSoft has introduced the *HandiPad*, a new digitizing tablet for the Archimedes which can replace the mouse for use with any applications. The tablet plugs into the serial port, and can take input either by using a mouse-like 'puck', which has a see-through circle with cross hairs for accurate positioning, or via a pen-like

Hearsay II

The most advanced communications package for Archimedes systems.



MET OFFICE (c) 3ip+MIN 208110a
UK FORECAST FOR
TODAY
issued @ 5 am Thu.
Early drizzle
Mostly cloudy. Some
brighter spells
Dry. Some broken
cloud giving
sunny intervals
Key for tonight
0 BUSINESS INDEX 9 MET OFFICE INDEX



Hearsay II is a multi-tasking and fully RISC OS compliant communications package designed for easy communications for the first-time user, but with a wide range of advanced features making it the professionals choice.

It is ideal for use with Prestel, Telecom Gold, Campus 2000 and Compuserve, and also provides very high quality VT320, VT102, VT52 and Tektronix 4105 Colour terminal emulations for direct connection to mini and mainframe hosts.

Members price £79.31

In addition it gives access to Minitel systems such as the Teletel service and provides Xmodem, Ymodem, Zmodem and Kermit file transfer, a comprehensive script language and an auto-dial number directory.

- Fully RISC OS compliant
- Multi-tasking and background transfers
- Scalable terminal windows
- Xmodem, Xmodem1K, Ymodem, Zmodem, Kermit, SEAlink, and ASCII file transfer
- Batch file transfer
- Script language based on a subset of C
- Macro processor and definable keyboard
- Support for RISC OS printer drivers
- Number directory with auto-logon and password protection
- MNP 2 and Vasscom error correction
- Supports most popular modems e.g. Hayes

Upgrade to version II

Upgrade from Hearsay I for only £41.13 plus £3.10 carriage. Please return original disc to address below.

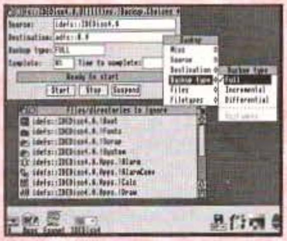
'It does everything we want, and is a pleasure to use.' ARCHIVE Jan 92

'Background data transfer, a well documented script language and high RISCOSity make this a powerful contender...' ARCHIMEDES WORLD April 92

'...the manual is an excellent example of thoroughness and clarity...Hearsay II is a very good communications package and is thoroughly recommended...' ACORN USER May 92

Hard Disc Companion II

Hard disc backup and retrieval



Source: idefs::IDEDisc4.$
Destination: adfs::0.$
Backup type: FULL
Ready to start

Version II of Hard Disc Companion offers superior performance and efficiency. It has been completely re-written and is now twice as fast and even easier to use.

It provides a structured approach to the backing up of hard drives, and the recovery of files in the event of disc failure or accidental file deletion. Both Full and Incremental backups are supported, and the files to be backed up or ignored may be specified using simple drag operations.

Members price £47.59

The entire backup specification may be saved in a script file for use at a later date. Hard Disc Companion II uses an efficient compression system to backup as much data as possible onto the floppies without increasing the backup time.

Separate applications are included to restore entire backups or just selected files.

Upgrade to version II

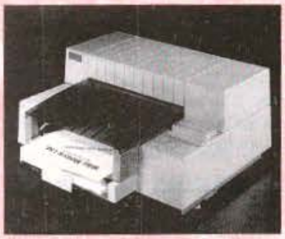
Upgrade from Hard Disc Companion I for only £17.63 plus £2 carriage. Please return original disc to address below.

'Good value for money...A nearly foolproof interface...Hard Disc Companion keeps things simple and as fast as possible...' MICRO USER May 92

'...it is certainly the best hard disc backup utility that I have ever used.' ARCHIVE Apr 92

Colour Printer Drivers

For HP DeskJet 500C and Star colour printers



The **PrinterDJ** printer driver produces near laser quality output from the highly acclaimed Hewlett Packard DeskJet 500C colour printer.

Both release 2 and release 3 drivers are supplied, each supporting 75 x 75, 150 x 150 and 300 x 300 print resolutions in monochrome, grey scale and full colour modes.

Members price £15.86 each

PrinterLC is the approved printer driver for Star colour dot-matrix printers. It is suitable for both 9 and 24-pin printers including: LC24-200, LC-200, XB24-10 and LC-10. PrinterLC is a release 2 driver, supporting print resolutions from 60 x 72 dpi to 360 x 360 dpi depending on the printer model. Also suitable for many Epson and NEC colour printers.

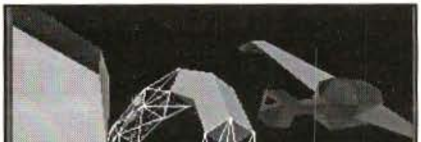
RISC developments

RISC Developments Limited. 117 Hatfield Road, St. Albans, Herts. Al1 4JS. To order, or for more information, call (0727) 40303

All software is suitable for Archimedes, A5000 and A3000 systems with 1Mb RAM and RISC OS 2.00 or 3.00.
Prices include VAT but please add carriage of £3.10 for Hearsay II and £2 for other products.
All prices are for single users—site licence prices available on request.

THREE DIMENSIONAL FOURTH DIMENSION

The Fourth Dimension, which never seem to be absent from these pages for long, has announced a new game from Gordon Key, author of a number of classics for the Archimedes. The press release for *Black Angel* contained some fancy poetry but few hard details, but on grilling the publishers it appears that this is the 3D space adventure game to end all 3D space adventure games. You fly your craft between stars and planets, using your formidable range of weapons to blow your enemies out of the sky while performing a number of missions. All this sounds just like Elite, but Steve Botterill, director of the 4th Dimension, said that Black Angel is far more advanced, with explosions that look like real explosions should, and planets that have landscapes. There is also a version that will need an ARM 3 and 2Mb of RAM to run, that will exploit the extra hardware to the full. Black Angel will cost £34.95 inc. VAT, and will be available in July 1992 from The Fourth Dimension, 1 Percy Street, Sheffield S3 8AU, tel. (0742) 700661 or 769950.



BBC SOFTWARE WITH LONGMAN LOGOTRON

BBC Educational Publishing and Longman Logotron have released their BBC Software for Schools catalogue, which includes a number of products for the Archimedes. The catalogue contains details of the *Landmarks* series (see last month's News pages), the communications application *ArcComm 2*, and titles from the *Look and Read* series. A new title has been added to the latter series, namely *Through the Dragon's Eye*, which is an adventure game for Lower Juniors. Finally, a new product called *Pendown Etoiles* has been announced, which is a sophisticated word processor in which all instructions and the spelling checker are in French. Titles in the Landmarks series cost £28.20 each, ArcComm 2 costs £69.35, Look and Read titles cost £28.20 each and Pendown Etoiles costs £63.45. All prices include VAT and are for the Archimedes versions of the software. Some of the titles are available for the 8-bit BBC range, the RML Nimbus and IBM compatibles, but the prices are different. Contact BBC Educational Publishing at Room A3155, Woodlands, 80 Wood Lane, London W12 0TT for more details.

Longman Logotron has joined with a number of other companies (including Acorn) to launch a primary school management package in September 1992. The system will cover all aspects of pupil and staff records, purchasing, budgeting and the school account, and will be squarely aimed at the needs of primary schools in the state maintained sector. The system will run on Archimedes computers, and further details can be obtained from Christopher Roper, Managing Director, Longman Logotron, 124 The Science Park, Milton Road, Cambridge CB4 4ZS, tel. (0223) 425558, fax (0223) 425349.

'stylus' that is more suitable for freehand drawing. The HandiPad has a 305mm x 305mm (12" x 12") active area, a transparent overlay sheet to place drawings under, and comes complete with a mains power supply, the puck, the stylus and a serial cable. The software can cope with both the tablet and the mouse if desired, by allowing the mouse to become active if the puck or stylus is moved off the tablet. The price for the package is £175 plus VAT, and more details are available from TechSoft UK Ltd., Old School Lane, Erryrys, Mold, Clwyd CH7 4DA, tel. 082-43 318, fax 082-43 564.

AID FROM THE LORD OF THE RINGS

Newly formed Rheingold Enterprises has announced its first two products. The first, *TextAid*, provides facilities for any applications that process text, like DTP packages. It allows creation of up to 20 text macros which can then be entered via single keypresses, and other features include date and time entry; incremental value entry; inclusion of control codes into Edit and SrcEdit; conversion from CSV and TSV files to text and vice versa; and finally TextAid can transfer text from any text icons or window titles into editors simply by clicking on that icon. TextAid costs £9.95 inc. VAT and p&p, and will be available from June 1992.

The other new product, which should be available soon, is *TimeLord*, a comprehensive time management system providing multiple stopwatch/timer facilities plus a host of other powerful functions, some of which can be linked into other applications. Contact Rheingold at 17 Ingfield Terrace, Slaithwaite, Huddersfield HD7 5BJ, tel. (0484) 846126.

INTO THE GREAT WIDE OPEN

Projected release dates for various packages we are eagerly waiting for are as follows:

- Computer Concepts' Artworks - midsummer
- Software for Computer Concepts' FaxPack to enable files to be transferred over the phone line - mid-May for single file transfers, and by mid-June for directory transfers
- Eureka from Longman Logotron - end of July/beginning of August

Virtual Reality Explored

Keith Powell looks at three dimensional reality on the Archimedes, and presents a program to create one such world.

Many of you will have heard of Virtual Reality and no doubt you have been excited by the prospect of experiencing it one day. Unfortunately, most of us are unlikely to enjoy the real thing for some time to come, as the equipment required is very expensive and hence rare.

So, briefly, what is Virtual Reality? Well, the heart of a full Virtual Reality system is a very powerful graphics computer. This is usually connected to the person entering *cyberspace* (the name given to the Virtual World) via a headset and a glove. This method of entering cyberspace is the most popular at the moment, but soon full bodysuits will become available and *cybernauts* (the people who explore cyberspace) will be able to immerse themselves completely in this other world.

The headset consists of a helmet which obscures normal vision when it is placed over the head. It contains two small monitor screens, one in front of each eye, which are just like pocket colour television sets. These screens display images from the computer, but the left and right hand screens do not show the same image: they employ what is called *stereoscopy*.

Stereoscopy is the method we use for fooling the eye into thinking it is seeing in three dimensions. We have two eyes specifically so that we can tell how near or far objects are, which is obviously most useful for efficient operation in three dimensions (try driving with no depth perception!). Each of our eyes sees a slightly different view of the world, and because our brain knows how far apart our eyes are, it can work out the distance of any object. Headsets can fool our brains into thinking that objects are at a distance (rather than on a screen only inches from our eyes) by presenting different images to each of our eyes.

MOVEMENT

Even though the headset may be bulky and heavy, you can move your head around when wearing it, and you can also twist your body or lean forward to move it even further. Built into the headset are sensors which are connected to the computer and detect any movement of the head, enabling the image seen to be recalculated.

In a remote viewing system (i.e. one where the scenes viewed come from cameras in the real world, rather than being computer generated), we could set up a stereoscopic effect by positioning two television cameras side by side which feed video signals of the scene to each of the headset's monitors. If the sensors were connected to a servo system controlling the direction in which the two cameras point, the cameras would move in unison with the head movements. Thus with remote cameras you could, for instance, look around and examine an inhospitable environment stereoscopically from the comfort of your laboratory.

THE GLOVE

Some systems have a glove which you usually wear on your right hand. This has several sensors which detect any positional movement of your hand and the curling of your fingers. When you raise your hand in front of you, a stylised image of your hand appears in cyberspace, reflecting the positions of your fingers and following their movements. In cyberspace the way to move around is to point in a direction, and you then move forward into the scene in that direction. Obviously with today's technology you can't move in real life as you have millions of pounds of computer equipment attached to your head and hand!

The glove is not only used for movement, however. If the scene contains an appropriate object, it is possible for you to push it and sometimes even to pick it up. Sophisticated gloves have small balloons in the tips of the fingers which can be inflated and deflated very quickly by the computer. These are inflated when the images of your fingers touch an image of an object and they thus give you the impression in your finger tips that the object is being touched, so that you can gently 'feel' an object.

SOUND

Appropriate stereophonic sound can be played through earphones. Simply using right and left earpieces, the effect of sound being to the right or left of you can be simulated, and this can create two dimensional virtual sound. Moving your head changes the balance of sound, which means the apparent source of the sound, stays in the same place. So, as you turn towards a virtual radio, the sound appears to come from the set itself.

Modern virtual sound earphones can mimic the way the brain decodes aural information, and can create true three dimensional sound, which can be above and below the cybernaut as well as around him.

DUAL SYSTEM

If a second headset and glove are connected into the system, you can 'see' an image of the person wearing them, and that image will move under the control of the other person, who can similarly see an image of you. You can interact with each other, perhaps one of you 'holding' a cup while the other seemingly pours tea into it (complete with suitable sound effects, of course). When you remove your headset, you will be brought back to earth with a bump when you realise that the person controlling the other image was perhaps not even sitting in the same room as you at the time!

VIRTUAL REALITY ON THE ARCHIMEDES

So, how does the Archimedes fit into the Virtual Reality scene? Well, currently, not at all. There are no headsets, gloves, interfaces or software available. However, you don't need all this equipment to fool the eye into thinking it is seeing in three dimensions.

Basically, if you can persuade one of your eyes to see one view of a scene and your other eye another, then you have a stereoscopic effect. One way of doing this is the two-screen effect described above, but there aren't many Archimedes with two monitors, so how can we achieve stereoscopy on one screen?

Light filters only allow one particular colour of light through, so, for example, a piece of red gel (i.e. transparent coloured film) will only let red light pass through it. So, if we draw the scene we want the left eye to see in red and place a red gel over the left eye, then the left eye will be able to see this image. Similarly, drawing the right hand scene in green and placing a green gel over the right eye means the right eye can see the correct scene. On the other hand, the green image will not pass through the red filter, and vice-versa, so each eye will not be able to see the other scene. This boils down to each eye seeing a different scene, which can create stereoscopy if the red and green scenes are drawn properly.

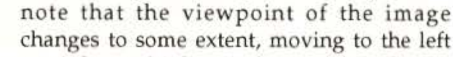
THE PROGRAM

The program presented here displays a three dimensional scene in red and green. If you type the program in and run it, the scene will look like a mess of colour, which hardly looks like three dimensional graphics. However, if you place a red gel over your left eye and a green gel over your right, then the scene is miraculously transformed into a two ball cradle in three dimensions - it really has to be seen to be believed. You can even make glasses out of cardboard to hold the gels, but don't go out in them unless you want to look like a refugee from the seventies!

The program uses two screen banks to avoid screen flicker (one bank is displayed while the other one is updated), so you will need twice as much screen memory as you normally need for mode 12. The easiest way to arrange this is to select mode 15 from the Desktop before running the program.

MOVEMENT VIA THE MOUSE

The program generates the images in real time. If you move your mouse, you will note that the viewpoint of the image changes to some extent, moving to the left or right, or higher or lower. Moving the mouse to the left causes the view to be more from the right, which again is unfortunately not the effect we want.



Setting up your mouse for the program

The solution is like something out of Blue Peter. Rest a stout piece of corrugated cardboard on the table in front of your monitor so that it is almost vertical but leaning slightly towards the monitor. This should be about as wide as the screen and should rise to about a third of the way up the screen. The top of the board should be as close to your monitor as possible with you focusing your eyes upon the screen when your chin is resting upon the board. If the board is larger than you need, bend over the excess and tuck it under your keyboard. It would be nice if this board could be precisely vertical, but the ball of the mouse relies on gravity to pull it into position, so the board must lean slightly away from you.

Hold your mouse against the upper part of this board with its "tail" hanging downwards. Rest your chin against the mouse and move your head and mouse together from side to side and up and down. The image will change accordingly. As your head moves to the left, you will have a better view of the left-hand side of the box or the ball will swing towards your right ear. You should have the impression that the image is stationary and only your head is moving.

If that sounds too much like trying to put do-it-yourself furniture together, have a look at the diagram for more clues.

On the magazine disc this month are four other Virtual Reality programs, simulating a large building and a musical keyboard complete with stereo sound. Don't get lost!

RED AND GREEN GELS

If you cannot get hold of the red and green gels mentioned in this article, then we can supply them. We are sending out an envelope containing a free pair of gels with each magazine disc (including those who subscribe to the disc), but if you do not want to purchase the disc, you can obtain the gels by sending a sticky label with your name and address on it (note: not an SAE), along with two first class stamps, to the usual address. Please mark the envelope "Free Gel Offer" and address it clearly to the Publications Department. If you would like more than one pair of gels, then please enclose an additional first class stamp for each extra pair you require. This offer will be open until the 31st July, as long as stocks are available.

```
10 REM            >VirtBall2
20 REM Program    VR: Two Ball Cradle
30 REM Version    A 1.00
40 REM Author     Keith Powell
50 REM RISC User July 1992
60 REM Program    Subject to Copyright
70 REM            Not Public Domain
80 :
90 ON ERROR PROCerror:END
```

```
  100 SYS "OS_Byte",161,194 TO ,,mousest
ep%
  110 MODE 140:OFF
  120 MOUSE STEP 1:s1%=1:s2%=2
  130 PROCcolours:PROCmatrix:TIME=0
  140 :
  150 REPEAT
  160 FOR e=0 TO 359 STEP 4
  170 SYS "OS_Byte",113,s1%
  180 SYS "OS_Byte",112,s2%
  190 PROCmouse
  200 WAIT:PROCplot:SWAP s1%,s2%
  210 NEXT
  220 UNTIL FALSE
  230 END
  240 :
  250 DEFPROCcolours
  260 COLOUR 0,128,128,0
  270 COLOUR 1,240,112,0
  280 COLOUR 2,112,224,0
  290 COLOUR 3,224,224,0
  300 ENDPROC
  310 :
  320 DEFPROCmatrix
  330 DIM A%(360,8)
  340 FOR e=0 TO 359
  350 A%(e,0)=40*SIN(RAD(e))
  360 A%(e,1)=-200*COS(RAD(e*2))
  370 A%(e,2)=640+A%(e,0)/2
  380 A%(e,3)=640-A%(e,0)/2
  390 A%(e,4)=500+A%(e,1)
  400 A%(e,5)=(e+90)
  410 IF e>89 THEN A%(e,5)=(270-e)
  420 IF e>269 THEN A%(e,5)=(e-270)
  430 A%(e,6)=640-300*SIN(RAD(e+90))
  440 A%(e,7)=350-50*COS(RAD((e+90)*2))
  450 A%(e,8)=40*COS(RAD(e))
  460 NEXT
  470 ENDPROC
  480 :
  490 DEFPROCmouse
  500 MOUSE X%,Y%,Z%
  510 X%=(X%-640)*0.8
  520 Y%=(Y%-512)*0.8
  530 quarterX%=X%>>2
  540 quarterY%=Y%>>2
  550 sixteenthY%=quarterY%>>2
  560 fivexY%=A%(e,5)*sixteenthY%>>5
  570 diag%=X%*A%(e,0)>>6
  580 eightxX%=quarterX%*A%(e,8)>>10
  590 ENDPROC
  600 :
  610 DEFPROCplot
  620 CLS
  630 REM *** wires 1
  640 GCOL 1
  650 MOVE A%(e,2)+diag%,A%(e,4)+fivexY%
  660 PLOT &15,640,1000
  670 GCOL 2
  680 PLOT &15,A%(e,3)+diag%,A%(e,4)+fiv
exY%
  690 REM *** circles 1
  700 GCOL 1,1
  710 MOVE A%(e,2)+diag%,A%(e,4)+fivexY%
  720 PLOT &9D,A%(e,2) +diag%,A%(e,4)+fi
vexY%+110+A%(e,0)
  730 GCOL 1,2
  740 MOVE A%(e,3)+diag%,A%(e,4)+fivexY%
  750 PLOT &9D,A%(e,3)+diag%,A%(e,4)+fiv
exY%+110+A%(e,0)
  760 REM *** wires 2
  770 GCOL 1,1
  780 MOVE A%(e,6)+eightxX%,A%(e,7)+quar
terY%
  790 PLOT &15,640,1000
  800 GCOL 1,2
  810 PLOT &15,A%(e,6)-eightxX%,A%(e,7)+
quarterY%
  820 REM *** circles2
  830 GCOL 1,1
  840 MOVE A%(e,6)+eightxX%,A%(e,7)+quar
terY%
  850 PLOT &9D,A%(e,6)+eightxX%,A%(e,7)+
quarterY%+100
  860 GCOL 1,2
  870 MOVE A%(e,6)-eightxX%,A%(e,7)+quar
terY%
  880 PLOT &9D,A%(e,6)-eightxX%,A%(e,7)+
quarterY%+100
  890 REM *** front lines
  900 GCOL 1,2
  910 MOVE 310+quarterX%,900+quarterY%
  920 PLOT &15,310+quarterX%,50+quarterY
%
  930 MOVE 950+quarterX%,900+quarterY%
  940 PLOT &15,950+quarterX%,50+quarterY
%
  950 GCOL 1,1
  960 MOVE 330+quarterX%,900+quarterY%
  970 PLOT &15,330+quarterX%,50+quarterY
%
  980 MOVE 970+quarterX%,900+quarterY%
  990 PLOT &15,970+quarterX%,50+quarterY
%
 1000 REM *** back lines
 1010 GCOL 1,1
 1020 MOVE 450-quarterX%,800-sixteenthY%
 1030 PLOT &15,450-quarterX%,200-sixteen
thY%
 1040 MOVE 810-quarterX%,800-sixteenthY%
 1050 PLOT &15,810-quarterX%,200-sixteen
thY%
 1060 GCOL 1,2
 1070 MOVE 470-quarterX%,800-sixteenthY%
 1080 PLOT &15,470-quarterX%,200-sixteen
thY%
 1090 MOVE 830-quarterX%,800-sixteenthY%
 1100 PLOT &15,830-quarterX%,200-sixteen
thY%
 1110 REM *** mouse position triangles
 1120 GCOL 3
 1130 REM *** X axis
 1140 MOVE 130,10
 1150 PLOT &05,130,20
 1160 MOVE 1155,10
 1170 PLOT &05,1155,20
 1180 MOVE 630-X%,0
 1190 MOVE 650-X%,0
 1200 PLOT &55,640-X%,10
 1210 MOVE 10,920
 1220 PLOT &05,20,920
 1230 MOVE 10,105
 1240 PLOT &05,20,105
 1250 REM *** Y axis
 1260 MOVE 0,502-Y%
 1270 MOVE 0,522-Y%
 1280 PLOT &55,10,512-Y%
 1290 ENDPROC
 1300 :
 1310 DEFPROCerror
 1320 MODE 0
 1330 REPORT:PRINT " at line ";ERL
 1340 MOUSE STEP mousestep%
 1350 ENDPROC
```

THERE ARE TIMES WHEN A MOUSE IS A REAL HANDFUL!

A mouse is great as a pointing device, but when it comes to freehand drawing in art packages, accurately tracing drawings, or mapping contours, etc., it can prove a real handicap. The TechSoft HANDIPAD digitizing tablet is an absolute device. Unlike a mouse, the puck's position on the tablet always corresponds to the cursor position on screen. The puck has cross hairs for accurate tracing. Alternatively, the pen-like stylus can be used to allow a much more natural drawing action, far better for artistic and freehand work. The stylish Handipad has a 305x305mm active area, transparent overlay sheet to place drawings under, and comes complete with mains power supply, puck, stylus and serial cable. (Makes a great mouse mat too!)

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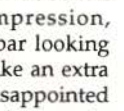
Auto-Booting the Desktop

Keith Cox looks at ways of booting your system when Compression files are used.

I used to believe that once I had a hard disc on my system, storage space would never again be a problem. Having been proved totally wrong, I am now grateful for the compression utilities which have appeared on the market. I particularly liked the sound of Computer Concepts' Compression, because it appears on the icon bar looking and behaving for all the world like an extra drive. However, I was a little disappointed having bought Compression to discover in the manual a recommendation not to compress programs.

The reasons given are that programs do not compress well, and that compressing a application can cause problems when the filing system tries to run the !Boot file if the program has not appeared in a Compression window. Some programs do not compress well, but a reduction in Flexifile, for example, from 539,348 bytes to 343,004 certainly seems worth having. The solution to the second problem lies in the following routines.



RISC User has published several articles and tips in past issues on the topics of automating the Desktop, and on the problem of Edit's inability to handle large numbers of fonts. This article shows how to put all the above together to set up your hard disc so that your favourite applications are installed on the icon bar whenever you switch on; Edit is loaded and ready for use without having to restrict the number of fonts available to other programs such as DTP; and the Compression drive appears automatically when you switch on. We can also incorporate *See_Apps* (see RISC User 4:8 and 5:1) which tells the computer how to recognise certain filetypes and how to load their programs. It has the advantage of saving memory because the programs are only loaded if they are needed during that session. If, for example, you were using a floppy disc containing a 1st Word Plus file, double-clicking on that would load 1st Word Plus from your hard disc.

CREATING A DESKTOP BOOT DIRECTORY

Open the root directory of your hard disc (the filer window which comes up when you click on the hard disc icon) and create a new directory called *DeskBoot*. Click twice with Select to open the DeskBoot directory. Transfer into this directory Edit and any other applications which you wish to install automatically when you turn on your computer. As an example, we are also going to install Alarm, Calc and Diary (all on the Applications Discs).

THE !FONTS DIRECTORY

Make sure that your main !Fonts and !System directories are in the root directory of your hard disc.

To avoid problems running Edit as your fonts collection grows, make a full copy of your !Fonts directory inside your new DeskBoot directory. Hold down Shift and click twice with Select over this new copy of !Fonts. Each font is in a separate directory labelled with its name. Delete all the font directories from your *second copy* of !Fonts until you have left only those which you are likely to use in Edit (less than 12 is recommended).

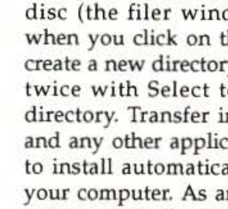


Figure 1

CREATING A !BOOT APPLICATION

You may also find it helpful to refer to the article in RISC User 4:5 p.20. Start by installing Edit on the icon bar. Click with the Menu button over Edit's icon, move to *Create*, across the arrow and down to *New*

Obey file. Now click Select. Type the following line into the resulting Edit window:

```
Desktop -File <Obey$Dir>.DeskBoot
```

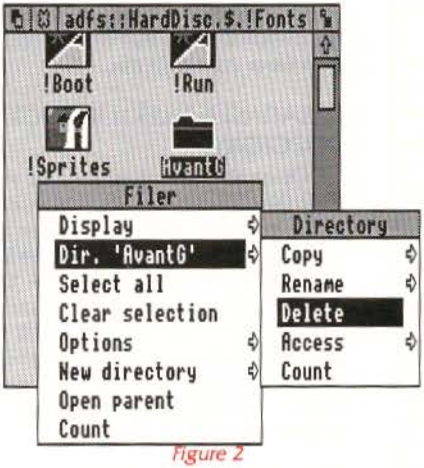


Figure 2

Now display the root directory of your hard disc and create a new application directory called !Boot. Position the mouse pointer over the !Boot application icon, hold down Shift and click Select twice to open the !Boot directory. With the pointer over your newly created Edit window, choose the *Save* option and give your file the name *!Run*. Drag it into the empty !Boot directory window. Close the Edit window.

Click Select over the Edit icon (on the icon bar) and type the following into the Edit text window (n.b. press Return at the end of each line - and at the end of the last line too):

```
Set System$Path adfs::HardDisc.$.!System.
SetMacro Font$Path <Font$Prefix>.
Set Font$Prefix adfs::HardDisc.$.DeskBoot
.!Fonts
Run adfs::HardDisc.$.DeskBoot.!Edit
Run adfs::HardDisc.$.!Fonts
Run adfs::HardDisc.$.DeskBoot.!Alarm
Run adfs::HardDisc.$.DeskBoot.!Calc
Run adfs::HardDisc.$.DeskBoot.!Diary
Filer_OpenDir adfs::HardDisc.$
```

Make sure that the *Filer_OpenDir* line comes last. Choose the Save option from the Edit menu and give your text file the name *DeskBoot*. Drag it into the !Boot directory window. When entering the above, replace *HardDisc* with the name of your system's hard disc.

You will need to change the above commands to suit the applications which you have chosen to include in your DeskBoot directory. The syntax (using Edit as an example) is:

Run

adfs::	your chosen filing system (alternatives could be scsifs or idefs)
HardDisc.	the name of your hard disc or a drive number
$.	the symbol for the root directory
DeskBoot.	your new directory containing the applications chosen to be loaded automatically
!Edit	the name of the application in the DeskBoot directory

For further information on customising the DeskBoot file see RISC User 4:5 p.20.

Next, the boot option on the hard disc needs setting. Make sure the hard disc is mounted - press F12, type:

```
MOUNT 4
OPT4,2
Configure Boot
Configure Drive 4
```

(to set the hard disc as the default if this is not already set). Press Return again to get back to the Desktop.

!RUN_APPS AND !CFS

!CFS from Compression should be on your hard disc in the root directory so that its !Boot file can be read. You will also need in the root directory the application Run_Apps (see RISC User 4:8 p.34, and also 5:1 p.71 for a further update - the magazine disc for issue 5:1 contains improved versions of *Run_Apps* and *See_Apps* - see below). Click Select twice over the Run_Apps application and place a *second* copy of !CFS inside the !Run_Apps directory.

!SEE_APPS

Place a copy of !See_Apps in the hard disc's root directory. Click Select twice over the !See_Apps directory and transfer into the directory which opens any applications which you use regularly (your favourite word processor, spreadsheet, Draw, Paint etc.). After booting, the filing system will then recognise the appropriate filetypes and, if you find you need them during a session, will be able to load these applications when you double click on their files.

WHAT NOT TO COMPRESS

Do NOT compress the following:

- Your !Boot application.
- !System.
- The !Cfs application in the hard disc root directory.
- The DeskBoot directory and its contents.
- !Fonts in the hard disc root directory.
- !Run_Apps.

Anything else, including !See_Apps and its contents can be compressed.

Whenever you switch on, your favourite applications should load automatically and the Compression icons should be sitting on the icon bar looking for all the world and behaving like extra drives.

Finally, if you change your templates files to allow Filer windows to move beyond the edge of the screen and go behind the icon bar (see RISC User 5:2 p.25), the line instructing RISC OS to search for your new templates file can go into the !Run file of your !Boot application as the *first* line:

```
Set Wimp$Path adfs::HardDisc.S.,DeskFS:
Desktop -File <Obey$Dir>.DeskBoot
```

Note: unlike Edit, DeskEdit does not suffer the same limitation regarding the number of fonts with which it can be used).

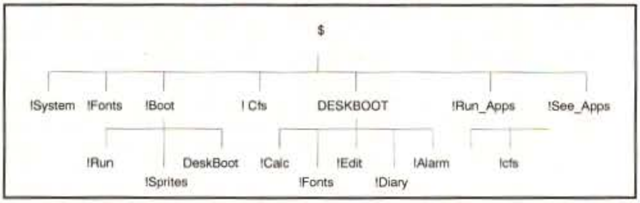


Figure 3

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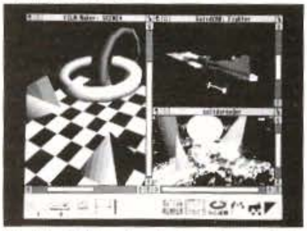

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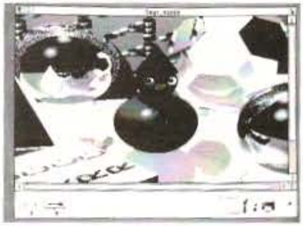

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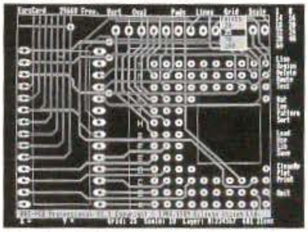

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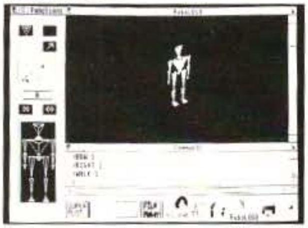

This new extension to traditional LOGO, provides three dimensional control of an articulated humanoid or animal figure based on the standard LOGO language. Natural commands such as 'Walking', 'Turning', 'Bowing', and 'Picking', etc are automatically represented graphically by natural movements of the 3D figure which is readily understood by students using LOGO as an introduction to computing. The traditional Turtlegraphics & 3D Glider features are also supported for students to further explore their school work.

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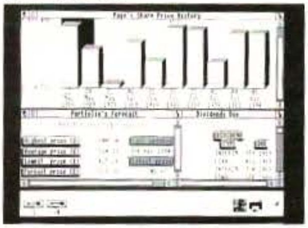

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Multimedia Revisited

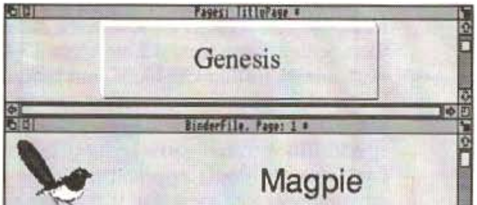
Ian Lynch provides a welcome update on the fast developing world of multimedia.

INTRODUCTION

In the last article on multimedia (RISC User 5:2), I outlined some of the technical background behind multimedia technologies together with some examples of what has been done so far. It still seems that we are more at a tool gathering stage with both software and hardware being developed to support authoring packages. There is also the 'standards' issue with filetypes and data structures striving to become widely enough used to warrant support by third party designers. However, some complete digital multimedia applications are being marketed in their own right at more affordable prices, and there are of course analogue applications such as the ILP/BNF science and maths discs described in the last article. Some of the tool development is significant and worthy of closer scrutiny.

GRAPHICS STANDARDS JPEG AND MPEG

Still pictures represented as sprites or TIFF (Tag Image File Format) take up far more space than is necessary, and there are various techniques which can be used to compress them. The problem with this is that if everyone uses different systems, it will be very difficult to transfer pictures between different software applications never mind between different types of computer. Acorn's ChangeFSI already supports many file formats, but it would be very inconvenient if future releases had to cope with hundreds of compression variations too. JPEG (pronounced jaypeg) is a format devised by the Joint Photographic Experts Group. It is designed to allow compression which will give maximum reduction in file size consistent, but which is as good as the original, as far as human vision is concerned, when redisplayed.



An abundance of authoring tools

Unlike the compression used by Spark, for example, JPEG loses some information and would not be too helpful in compressing a program which would probably not run reliably if a single bit is not recoverable on expansion. But JPEG does achieve much better compaction, and for pictures makes sure that any losses are unlikely to be detected by the eye. Unfortunately, original JPEG specifications were not sufficiently rigorous, and so several incompatible variants are in circulation mainly on Macs and PCs. The Independent JPEG Group are freely distributing a format known as JFIF which they hope will become the de facto standard, but this might take some time.

Multimedia requires not only still pictures but moving pictures too. In addition to the JPEG format for still pictures there is MPEG (pronounced Empeg) for moving pictures which has certain restrictions such as lack of random frame access. Whichever 'standard' establishes itself, it is likely that better methods will emerge with the dilemma of standardisation benefits versus greater efficiency and functionality. There is work in fractal compression, for example, which could give compression ratios several orders of magnitudes better than anything available at present.

REPLAY

Acorn's recent Replay (see *News*, RISC User 5:7) is a system for digitising video frames in a compressed film format, and then decompressing and displaying a film in a window on the Desktop. Replay compresses frames to about 6K of data, and the ARM can then replay these in real time from a variety of media including CD-ROM and hard discs. Clips of Replay format video can then be played back through Magpie, Genesis, or specifically written software applications as part of multimedia applications. The great advantage of Replay is that it runs entirely in software and does not incur the added expense of specialised hardware in order to allow it to run. There are some very impressive CD-ROM applications under development which use clips of Replay film as part of a general database.

The drawbacks of Replay are that the picture quality at full screen size is relatively poor when compared to say LaserVision or VHS tape, and replaying films hogs most of the processor so that the machine can't do anything else while the film is running. Normally, a quarter screen is used for video, and this gives reasonable results though still not as good as a conventional analogue system.

EIDOS

Eidos PLC is a company developing video editing machines using ARM technology. Eidos can compress video down to 2.5K per frame in real time as well as edit digital video quickly and easily on the Desktop. The quality of Eidos films is not quite as high as Replay, but they are more compact, and there is more control over editing. In addition to this, ways are being found of improving quality all the time, and Eidos says that it intends to support Replay format in its systems.

QUICKTIME

Quicktime is a Replay-like system for Macintoshes and PCs. It is generally not as smooth as Replay and gives first priority to audio playback, adjusting the frame rate of the video in order to sustain continuity. Whereas Acorn guarantee at least 12.5 frames per second with Replay on an ARM2 and 25 frames per second on ARM3, Quicktime can fall to 2 or 3 frames per second on the lesser 16 bit machines. It is likely, however, that Quicktime format films will be available in abundance, and since these are in a different format they will be incompatible with Replay. In principle I can't see why a conversion program could not be written - a sort of ChangFSI for video, but there may be problems with copyright and it might be easier to source video and compress it into Replay format directly, particularly if Eidos type systems become more widespread.

ANALOGUE OR DIGITAL?

You may be thinking that since the quality is not as good as current video players, digital applications are just not worthwhile. The great strength of digital systems is that they are much more flexible both for editing, copying, recording and applying special effects. They will generally also play back from a variety of media which potentially makes the expense of specialised equipment unnecessary. Systems with proprietary hardware are available to help digital systems along, for example Intel's DVI or Philips' CD-I, but they have been generally too expensive for common use in desktop computing, and in any case an analogue laser disc player with genlock can provide better quality at similar or lower cost. The situation we find ourselves in at present is a transitional one where the processing power and storage required for decent digital video are just beginning to come through, but with digital having to compete with established analogue systems which have had time to build up some reasonable applications.

There is a school of thought which says that software only systems will never really provide high enough quality and digital hardware assistance will always be necessary. In my view this is unlikely. Processor performance continues to improve, software is less expensive, so if at all possible do it in software. This is the ARM philosophy!

DEDICATED OR GENERAL PURPOSE SYSTEMS

One route for multimedia could well be a dedicated systems approach rather like games consoles. In the same way that Sega and Nintendo have taken a large slice of the computer games market, Commodore's CDTV and Philips' CD-I are attempting to break into the mass market of consumer electronics with multimedia applications. These systems are effectively black boxes which plug into TV sets and they will not give the flexibility of a desktop computer in terms of DTP, printing or programming. Perhaps in the longer term conventional keyboards, monitors, mice and printers will give way to new generations of equipment linked to high definition TV, but for the time being no matter how successful CD-I is, there will still be a place for desktop multimedia on general purpose computers.

THE IDEAL MULTIMEDIA MICRO

What will really make multimedia is a computer which can deliver its requirements as a standard package without the need for add-ons, complicated setting up procedures, or significantly greater expense than the prices people are paying for computers today. The A5000 is probably at least as far along this road as any of its competitors, but it is not there yet. It needs 24 bit video and compact disc quality audio as standard (a new VIDC would be needed to take care of this), a memory controller (MEMC) which can address more than 4 Mb by itself, a high quality audio digitiser for speech and other audio input, perhaps with a real-time video digitiser and compressor (faster ARM and high resolution ADC), and certainly real-time video play back (Replay).

The implications of this are that mass storage will have to be less expensive and read/write (unlike CDs which cannot be written to), and data transfer rates will have to be a lot better than CDs can offer. In addition, a new version of RISC OS would be needed in order that the Desktop could integrate these facilities and make them all easy to use. I would estimate that 8 Mb of memory and 500 Mb mass storage are probably a realistic minima with the ability to transfer data to the machine from a network or cartridge at 10 Mb/sec. This might seem a tall order, but I am absolutely sure that these things will become commonplace before the end of the decade. The main problem for Acorn is that the investment required in designing ever more complex systems is growing, and the development time available is very limited.

SPECIFIC APPLICATIONS

In the meantime, there is a market, particularly in education, for applications in which adequate quality video is acceptable, and where lower quality is compensated for by the convenience of digital systems. One project which will be exploiting this principle is ELOQUENT. ELOQUENT is a three year project backed by LINGUA, an agency of the European Community for improving language learning. It has been initiated by the City Technology Colleges Trust with partners in England, Crete, Italy, Belgium and Germany. Its aim is to produce multimedia language learning materials for vocational education and business users.

The development platform for ELOQUENT will be the A540, and there will be use of Replay and digitised audio in order to produce a fully interactive language learning workstation. An extension of the project is to explore the use of a network of A5000s as a digital language laboratory at Telford CTC. This would have the advantage of providing all the facilities of a desktop computer in addition to the conventional functions of a tape based language lab, but with the far greater flexibility of digital video and audio.

CONCLUSION

Realising specific and useful applications is currently the main challenge for digital multimedia, but increasingly Acorn and the other manufacturers will be looking in this direction for their survival and growth. I confidently predict that the nineties will see off analogue systems, and eventually home video recorders as well as computer systems will integrate digital video and audio wherever it is needed.

For more information on Replay contact Acorn on (0223) 245200, for Eidos contact Nick Davies at Eidos PLC on 081-941 7899, and for ELOQUENT contact Stephen Hagen on 091-460 2031. RU

Prophet

The most comprehensive accounts program yet seen for the Archimedes series of computers based on 10 years experience of writing business software on Acorn machines. Prophet's windows are dynamically linked to each other - produce an invoice and watch the customers record, the sales ledger, the sales analysis and the bank accounts windows being updated simultaneously. Your invoices, purchase orders, credit & delivery notes and statement layouts are all user-definable using template windows with each element having its own font, size and position. Words can not do justice to Prophet so we have produced a unique demo disc (£10 inc.) which lets you load AND SAVE your work. If you decide to buy the full version (£170 + VAT=£199.75), your work will not be lost and we will knock £10 off the price. New Zealand and Australian versions available - overseas orders £180 inclusive. See the review in Archive Magazine May 1992 - *if Acorn were to market a business package then Prophet would be one of the essential parts.*

The multi-tasking business program
for the Acorn A3000/Archimedes/A5000

Access

VISA

Apricote Studios

2 Purls Bridge Farm, Manea, Cambs PE15 0ND
Telephone: 035 478 432

Requires
2mb Ram

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Demo version £5.00 - deducted from subsequent purchase price. Single user £39.00. Commercial sites £229.00 - includes 6 manuals. Educational sites and charities £189.00 - includes 6 manuals. Extra manuals £10.00 each. No VAT. Allow 14 days for delivery. Orders and payments to...

Turing Tools 149 Campbell Rd., Cowley, Oxford OX4 3NX. *All trademarks acknowledged*

Prophet

Alan Highet looks at a new accountancy package to see if it will plug a gap in the market.

Accountancy software is a strange breed because it is very unlikely to be bought on a whim; you either need it or you don't. I, or rather my wife, needs just that as she is in the process of starting her own business, so I was pleased to be able to write this review.

The software is supplied on a single disc, which is full, and is accompanied by a 120 page manual. After initialisation which writes your name, or similar, to disc, the software may be freely copied to floppy or hard disc. Although the program runs from floppy, a hard disc is recommended and you will need at least 2Mb of RAM along with the outline font manager.

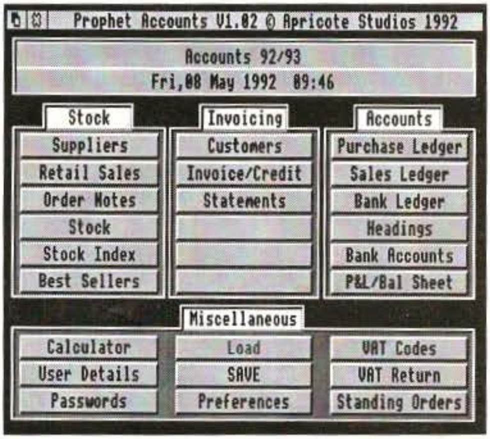
The program installs on the icon bar in the usual way, and a single click opens up the main menu. The author wrote the program using Archway (which I have not used myself), and if this program is anything to go by, it looks to be a good product. All the screens have a professional looking finish and everything is very logical in its layout.

The main menu gives easy access to 74+ windows, which may sound a little daunting but they are all explained in great detail in the manual, and many of them will only need to be accessed once to set the system to your own personal preferences.

SETTING UP

The first thing to do is to choose the name for the set of accounts, and as this is not used as a filename, you are not restricted to 10 characters. The chosen name is displayed at the top of the main menu along with the current date and time. Once this is done you can drag the save box to a filing window and from then on the accounts are saved to the proper directory automatically, with the option for saving a backup file as well. Any number of separate accounts can be stored in this way, and are loaded by double-clicking on the relevant icon, which will in turn load the program.

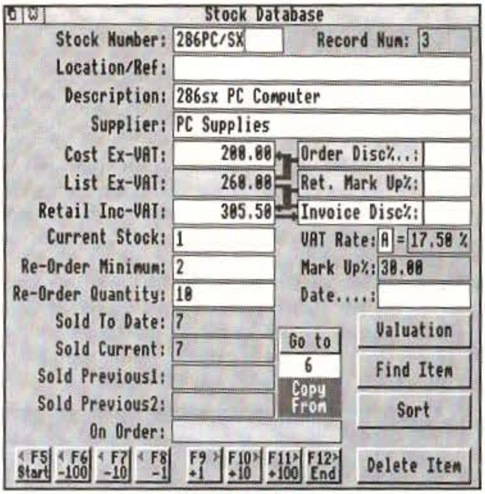
The next step is to set up your own details such as name, address and telephone and fax numbers. Then the suppliers and customers database can be opened and all their details entered along with contact names and comments. I liked the fact that these and all other functions remain fully editable at all times, which is very important because it is very difficult to get everything right first time, and details are always changing.



Main Menu

STOCK DATABASE

My wife's business will be the repair and alteration of clothes, and so I assumed that I wouldn't need the stock database - but I was wrong. On the manual's suggestion I entered post and packing as an item along with an hourly rate. I also entered some standard charges such as altering a hem and turning up a pair of trousers. All this meant that when writing an invoice you only had to enter a single reference number along with a quantity and the relevant prices were entered automatically. As each stock card keeps track of quantities sold you can see at a glance how many hours you have worked in any one account period.



Stock Database

Stock Number: 286PC/SX

Record Num: 3

Location/Ref:

Description: 286sx PC Computer

Supplier: PC Supplies

Cost Ex-VAT: 200.00

List Ex-VAT: 260.00

Retail Inc-VAT: 305.50

Order Disc%..:

Ret. Mark Up%:

Invoice Disc%:

Current Stock: 1

VAT Rate: A = 17.50 %

Re-Order Minimum: 2

Mark Up%: 30.00

Re-Order Quantity: 10

Date....:

Sold To Date: 7

Sold Current: 7

Sold Previous1:

Sold Previous2:

On Order:

Go to: 6

Stock Database

The stock database allows you to enter all the details of the product along with the prices. For normal stock items you can enter, among other things, the supplier, the cost to you, one of five VAT levels, re-order quantities and minimum stock levels. If you enter the trade cost, you can specify a mark-up percentage and the retail cost will be calculated, or you can specify the retail cost and the percentage will be displayed. All this sounds a lot more complicated than it really is, and very little needs be entered, with the program requesting an input if needed. For instance, if you specify a supplier for an item and your supplier database shows no record of said supplier, then the program informs you and offers to add the supplier if you wish.

INVOICES

Invoicing is a joy to use with the information being entered via a simple screen that allows you to choose a customer from a menu supplied from the customer database; entering a stock number produces all the relevant details, leaving you simply to add the quantity. Up to eighty transactions may be entered, which should be enough for most people, and an early settlement discount may be applied to any of the items independently of any quantity discounts allowed. The invoice can then be printed out straight away or can be tagged to be be printed at a later stage. The details can be automatically recorded in the Sales Ledger under a specified heading, and the invoice kept for future use, such as repeat orders or credit notes. On printing of the invoice the stock database totals are reduced by the quantity invoiced.

It is fairly common practice on an invoice to show the net total plus the VAT payable if an early settlement discount is taken. For example:- if an item costs £260 net and the discount is 5% the invoice will show £260 + £43.22 (VAT @ 17.5% on the discounted price of £247) giving a total of £303.22. The actual total cost paid will be £290.22 if the discount is taken, or £305.50 if no discount is taken. The figure transferred to the sales ledger is £303.22 which means that whatever payment is subsequently made the totals have to be manually changed on payment.

The invoice template itself needs to be set up prior to printing, but this is relatively simple. The screen shows a blank invoice with data fields which can be dragged around or deleted in a similar fashion to DTP screens. The global font can be altered to any sized outline font available, as can each individual field. As this template is used for invoices, credit notes and delivery notes, you can specify which boxes you want to appear for each sheet, as normally you wouldn't want the prices shown on a delivery note, nor an early settlement discount shown on a credit note. The only flaw I found was that there is only one title box which is set as a default to read 'invoice'. This can be altered to read anything you like, but has to be manually changed each time you want to print a credit note or delivery note.

SALES LEDGER

This shows all your income transactions either from purchase invoices or from a retail sales screen, and when someone pays their invoice it is simply a matter of entering the payment alongside the relevant entry.

STATEMENTS

These can be issued for overdue accounts and three different automatic messages can be added depending on how overdue the account is. As with invoicing, you can request that all customer accounts are checked and all overdue accounts printed, or a single customer can be selected from a menu. Again a template is available and can be customised in a similar fashion to the invoice template.

PURCHASE ORDERS

The purchasing side of the system is similar to invoicing, with a purchase order template taking information from your stock cards. You can specify an individual supplier or ask for all due orders to be printed, based on the minimum stock levels being reached. On a subsequent print run these orders will not be duplicated and a note is made on the individual stock card about the order being placed. I came across two problems in this area. The first is simple once you are aware of it and is that the stock card says 'On order' and a number, which I took to mean the quantity but is in fact the order number. This is a lot less of a problem if you use meaningful prefixes for your orders. The second problem is more important and occurs if you source your goods from more than one supplier. There is no option to be selective about the goods ordered so all items below the minimum re-order level from that supplier will be printed.

BANK ACCOUNTS

All income can be transferred to the bank account side of the program. In fact the manual suggests you set one account to show cash in hand and the other accounts to show your bank accounts, Visa accounts, petty cash etc. The cash in hand account takes its totals from the sales ledger and will show you any outstanding monies that need to be paid in. The bank account allows you to see at a glance what the state of your accounts is and allows you to reconcile the accounts when statements are received.

VAT

For those who are VAT registered there is a section devoted to VAT returns which is capable of returning sales or purchase tax returns for other countries as well as our own. The menu provides a very flexible way of displaying your returns and also allows you to output the figures in CSV format to allow them to be incorporated in spreadsheet or DTP packages.

MISCELLANEOUS

Some of the other functions include a standing order sheet allowing you to specify regular purchase or sales ledger entries, a four line calculator, and the ability to password protect all areas of the program. There is a facility to print address labels, stock labels and supplier lists as well as being able to export them to other packages via standard RISC OS Save boxes.

Also supplied is a package called *Transfer* which allows you to click with the Adjust button in any writable field, and then transfer the text into any other writable field by clicking Select - it will even transfer text to other packages.

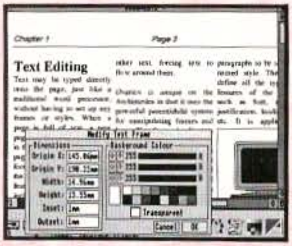
Although the profit and loss balance sheet is not ready yet I have spoken to the author and he seems hopeful that this part will be ready by the time you read this review.

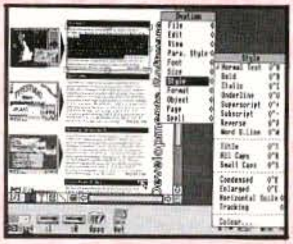
CONCLUSIONS

As an accounts and book keeping package Prophet fulfils all my needs for now and the future. I understand that the product is constantly being updated as the author receives feedback from his customers, and he is in the process of reprinting the manual to accommodate these changes and a few printing errors that have crept in. Despite a few errors, the manual is very clear and copes with the complexity of the product perfectly well.

I'm not sure that this, or any other package, would persuade anyone looking to computerise their accounts to buy an Archimedes, but I think anyone already using an Archimedes and requiring an accounts package would do well to look at Prophet.

Product	*Prophet*
Supplier	*Apricote Studios* *2 Purls Bridge Farm,* *Manea,* *Cambridgeshire PE15 0ND.*
Price	*£199.75 inc. VAT*





Ovation

Professional-quality desktop publishing in an easy-to-use affordable package.

The highly acclaimed Ovation desktop publisher sets new standards of quality and value by offering professional features in an easy-to-use package. Ovation provides a formidable array of features, yet can be used just like a traditional word processor to produce almost any documents from single page letters to entire books.

Members price £101.16

The Ovation package contains:

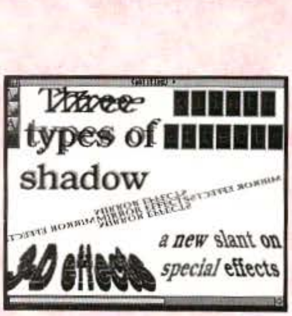
- 250 page ring-bound user guide suitable for both novices and experienced users
- A handly reference card listing all mouse and keyboard short-cuts
- 7 outline fonts (22 faces in total)
- Sample documents and range of clipart

Try before you buy!

A working demo is available for only £5 (inclusive), which is refundable against a future purchase of Ovation. This version has no save or spellcheck facilities.

Features include

- *multitasking/multi-documents*
- *full WYSIWYG display • variable views*
- *master pages • stylesheets • headers/footers*
- *multi-columns • linked text frames*
- *customisable start-up • chapters*
- *timed auto-save • keyboard short-cuts*
- *font size 1-1000pt • full colour support*
- *fast spelling checker (requires 2Mb)*
- *auto hyphenation (requires 2Mb)*
- *import draw & sprite files*
- *definable frame borders*
- *4 RISC OS printer drivers supplied*
- *find & replace with wildcards*
- *cut, copy and paste via clipboard*
- *line drawing with various line styles*
- *print options include: rotate, scale, collate*
- *kerning & tracking • text horizontal scale*
- *internal accuracy to 1/72,000 inch*
- *local styles such as Bold, Italic & Underline*
- *user definable paragraph styles*
- *left, centre, right and full justification*
- *left, centre, right and decimal tabs*
- *no copy protection*



TypeStudio

The flexible text effects package

TypeStudio is a complete text manipulation package ideal for producing professional quality adverts, posters, banners, logos, letterheads etc.

Drawing tools allow lines and curves to be drawn to create almost any shape, along which text can be flowed. Pairs of lines may be linked to create shapes into which text and Draw files may be moulded.

Members price £47.59

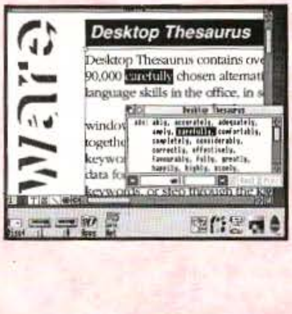
A range of special effects are available, including: shadow, slant, 3D and mirror.

- Flow text along straight and curved paths
- Mould text and Draw files to shapes
- Wall floor and graduated shadows
- 3-D, mirror, slant and plinth effects
- Save in internal and Draw file format
- Print using RISC OS printer drivers
- Grid and zoom facilities
- Copy, rotate and magnify
- Import Draw files as moulds

The package includes 7 fonts and a 64-page user guide containing many worked examples.

'Of the three (packages), TypeStudio is the most comprehensive. All the tools you are likely to need are included and there is no need to use any other application with it.'

ACORN USER May 92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Finds alternative words in an instant

Desktop Thesaurus contains over 11,500 keywords and nearly 95,000 alternative words. It is ideal for developing language skills in the office, in school or at home.

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Ideal for use with Ovation, Impression, Edit, Pipedream, 1st Word Plus and other desktop publishers and word processors.

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- Chosen synonyms may be transferred instantly to almost any application
- Data may be exported as a text file for editing and re-importing (requires 2Mb)
- Browse through keywords alphabetically

'...works both speedily and painlessly. This one is recommended.' ARCHIMEDES WORLD Jul 92

RISC developments

RISC Developments Limited. 117 Hatfield Road, St. Albans, Herts. Al1 4JS. To order, or for more information, call (0727) 40303

All software is suitable for Archimedes, A5000 and A3000 systems with 1Mb RAM and RISC OS 2.00 or 3.00.

Prices include VAT but please add carriage of £3.10 for Ovation and £2 for other products.

All prices are for single users—site licence prices available on request.

MouseTrap

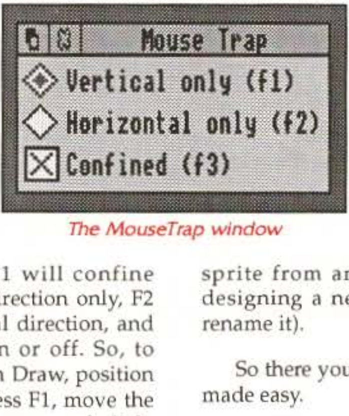
Confining Your Mouse

Peter Arnold presents an application to confine your mouse pointer to vertical and horizontal directions; guaranteed harmless to rodents.

Drawing perfectly straight lines or right angles in Draw or Paint can be quite a tricky affair. There are ways round the problem (like locking to a grid), but wouldn't it be nice if you could confine your mouse pointer to move only up and down or left and right? Well, the answer's yes, and just to prove it here is an application that does all this and more.

When this application is run, a little window appears containing two radio icons: (*Vertical only* and *Horizontal only*) and a yes/no icon (*Confined*). Clicking on the radio icons defines which type of confinement is applied to the pointer (i.e. confinement to either the vertical or horizontal direction), and clicking on the yes/no icon turns confinement on or off.

This sounds great, but isn't much use if you want to change the confinement direction half way through an operation (for example if you're drawing a rectangle), or if you want to confine the pointer away from the window. This is where the key shortcuts come in: F1 will confine movement to the vertical direction only, F2 will switch to the horizontal direction, and F3 toggles confinement on or off. So, to draw a perfect right angle in Draw, position the mouse at one corner, press F1, move the mouse up to the second corner and click, press F2, and then move to the third point and click: 90° precisely.


Mouse Trap

◆ Vertical only (f1)

◇ Horizontal only (f2)

☒ Confined (f3)

The MouseTrap window

Note that if a window is open for an application which traps the F1-F3 keys (like Edit or DeskEdit for instance) then the application will not work correctly. Closing the window or removing the input focus from it should solve the problem.

Another handy feature of the program is that it allows the pointer to be moved using the cursor keys, assuming again that these are not trapped by a window that owns the caret. The cursor keys on their own move the pointer slowly for accuracy, and with the Shift key held down the pointer moves much more quickly.

CREATING THE APPLICATION

To enter the application, you must create a directory called *!MouseTrap*, and open it up by double-clicking on it while holding down Shift. Next use Edit to create an Obey file called *!Run* containing the following three lines, and save inside the *!MouseTrap* directory:

```
WimpSlot -min 16K -max 16K
Run <Obey$Dir>.!RunImage
```

Next, type in the listing given here and save it as *!RunImage* inside *!MouseTrap*. Finally, use Paint to design a sprite called *!mousetrap* (mode 12, 34 pixels wide by 17 pixels high), and save this file along with the others (of course, you can borrow a sprite from another application to save designing a new one, but don't forget to rename it).

So there you have it - mouse confinement made easy.

PROGRAM NOTES

The program is a good example of how to use the standard radio and yes/no icons in windows. Basically you must create the sprite icon with a validation string "Sradiooff,radioon" for radio icons, and "Sno,yes" for yes/no icons (option icons would have a validation string "Soptoff/opton"), and then to change the state of the icon you simply set or unset the *Icon Selected* bit in the icon flags (using the SWI call *Wimp_SetIconState*).

This then "highlights" the icon, but because you have provided two sprite names in the validation string, the sprite is changed to the second sprite name given, rather than just being inverted (which is what normally happens to highlighted sprites, as in Filer windows). In the program, the icons are set up by *PROCCreateIcons* in line 1260 onwards, and the icon states are changed in *PROCSetIcons* from line 800.

```
   10 REM             >!RunImage
   20 REM Program     MouseTrap
   30 REM Author      Peter Arnold
   40 REM Version     A 1.10
   50 REM RISC User July 1992
   60 REM Program     Subject to Copyright
   70 REM             Not Public Domain
   80 :
   90 PROCInit
  100 ON ERROR PROCError(ERR,REPORT$+" a
t line "+STR$(ERL))
  110 REPEAT
  120 SYS "Wimp_Poll",1,Event% TO Action
%
  130 CASE Action% OF
  140 WHEN 2:SYS "Wimp_OpenWindow",,Even
t%
  150 WHEN 3:SYS "Wimp_CloseWindow",,Eve
nt%:PROCAllOver
  160 WHEN 6:PROCMouse(Event%!16)
  170 WHEN 8:PROCKeys(Event%!24)
  180 WHEN 17,18:PROCReceive(Event%!16)
  190 ENDCASE
  200 UNTIL FALSE
  210 PROCAllOver
  220 END
  230 :
  240 DEF PROCError(err%, report$)
  250 Size%=LEN(report$)+4
  260 DIM Block% Size%
  270 !Block% = err%
  280 $(Block%+4)=report$
  290 SYS "Wimp_ReportError", Block%, 1,
 "MouseTrap"
  300 PROCAllOver
  310 ENDPROC
  320 :
  330 DEF PROCInit
  340 Confined%=FALSE:Vertical%=TRUE
  350 SYS "OS_Byte",161,194 TO ,,Step%
  360 DIM q% 256, Indirect% 140, Event%
256
  370 $q%="TASK"
  380 SYS "Wimp_Initialise",200,!q%,"Mou
seTrap"
  390 PROCOpenWindow
  400 PROCSetIcons
  410 ENDPROC
  420 :
  430 DEF PROCMouse(icon%)
  440 IF icon%=0 THEN Vertical%=TRUE
  450 IF icon%=1 THEN Vertical%=FALSE
  460 IF icon%=2 THEN Confined%=NOT Conf
ined%
  470 PROCConfine
  480 PROCSetIcons
  490 ENDPROC
  500 :
  510 DEF PROCKeys(Key%)
  520 LOCAL x%,y%,z%
  530 MOUSE x%,y%,z%
  540 CASE Key% OF
  550 WHEN &181 : Vertical%=TRUE: PROCCo
nfine: PROCSetIcons
  560 WHEN &182 : Vertical%=FALSE: PROCC
onfine: PROCSetIcons
  570 WHEN &183 : Confined%=NOT Confined
%: PROCConfine: PROCSetIcons
  580 WHEN &18C : MOUSE TO x%-2,y%
  590 WHEN &18D : MOUSE TO x%+2,y%
  600 WHEN &18E : MOUSE TO x%,y%-2
  610 WHEN &18F : MOUSE TO x%,y%+2
  620 WHEN &19C : MOUSE TO x%-16,y%
  630 WHEN &19D : MOUSE TO x%+16,y%
  640 WHEN &19E : MOUSE TO x%,y%-16
  650 WHEN &19F : MOUSE TO x%,y%+16
  660 OTHERWISE SYS "Wimp_ProcessKey",Ke
y%
  670 ENDCASE
  680 ENDPROC
  690 :
  700 DEF PROCReceive(Num%)
  710 IF Num%=0 THEN PROCAllOver
  720 ENDPROC
  730 :
  740 DEF PROCAllOver
  750 Confined%=FALSE
  760 PROCConfine
  770 SYS "Wimp_CloseDown"
  780 END
  790 :
  800 DEF PROCSetIcons
  810 IF Vertical% THEN
  820 PROCSetIconState(0,2^21)
  830 PROCSetIconState(1,0)
  840 ELSE
  850 PROCSetIconState(1,2^21)
  860 PROCSetIconState(0,0)
  870 ENDIF
  880 IF Confined% THEN PROCSetIconState(2,2^21) ELSE PROCSetIconState(2,0)
  890 ENDPROC
  900 :
  910 DEF PROCSetIconState(icon%, eor%)
  920 !q%=Handle%
  930 q%!4=icon%
  940 q%!8=eor%
  950 q%!12=2^21
  960 SYS "Wimp_SetIconState",,q%
  970 ENDPROC
  980 :
  990 DEF PROCConfine
 1000 IF Confined% THEN
 1010 IF Vertical% THEN MOUSE STEP 0,Step%
 1020 IF NOT Vertical% THEN MOUSE STEP Step%,0
 1030 ELSE
 1040 MOUSE STEP Step%,Step%
 1050 ENDIF
 1060 ENDPROC
 1070 :
 1080 DEF PROCOpenWindow
 1090 PROCCreateWindow
 1100 PROCCreateIcons
 1110 q%!0=Handle%
 1120 SYS "Wimp_GetWindowState",0,q%
 1130 SYS "Wimp_OpenWindow",0,q%
 1140 ENDPROC
 1150 :
 1160 DEF PROCCreateWindow
 1170 LOCAL loop%
 1180 FOR loop%=q% TO q%+84 STEP 4
 1190 !loop%=FNGetNextNumber
 1200 NEXT
 1210 SYS "Wimp_CreateWindow",0,q% TO Handle%
 1220 ENDPROC
 1230 :
 1240 DATA 2,812,392,980,0,-128,-1,&87031012,&1070207,&20E0C,0,-1024,1280,0,61,0,1,0,&73756F4D,&72542065,&D7061,0
 1250 :
 1260 DEF PROCCreateIcons
 1270 LOCAL pointer%,temp$
 1280 pointer%=Indirect%
 1290 FOR loop%=0 TO 5
 1300 !q%=Handle%
 1310 q%!4 =FNGetNextNumber
 1320 q%!8 =FNGetNextNumber
 1330 q%!12=FNGetNextNumber
 1340 q%!16=FNGetNextNumber
 1350 q%!20=FNGetNextNumber
 1360 READ temp$
 1370 q%!24=pointer%
 1380 pointer%=FNStoreString(temp$,pointer%)
 1390 q%!28=pointer%
 1400 q%!32=LEN(temp$)+1
 1410 READ temp$
 1420 pointer%=FNStoreString(temp$,pointer%)
 1430 SYS "Wimp_CreateIcon",,q%
 1440 NEXT
 1450 ENDPROC
 1460 :
 1470 DATA 10,-180,48,-132,&700311B,"","Sradiooff,radioon"
 1480 DATA 10,-232,48,-184,&700311B,"","Sradiooff,radioon"
 1490 DATA 11,-284,50,-240,&700311B,"","Sno,yes"
 1500 DATA 54,-188,354,-132,&C7000119,"Vertical only (f1)",""
 1510 DATA 54,-236,386,-188,&C7000119,"Horizontal only (f2)",""
 1520 DATA 54,-280,274,-248,&C7000119,"Confined (f3)",""
 1530 :
 1540 DEF FNStoreString(s$,s%)
 1550 $s%=s$
 1560 =s%+LEN(s$)+1
 1570 :
 1580 DEFFNGetNextNumber
 1590 LOCAL a$
 1600 READ a$
 1610 =EVAL(a$)
```

Archimedes Software

Disc 35 Trace/D2Font - Make your own fonts

Trace is a program for converting Sprites into Draw files. D2Font, takes Draw files and produces outline fonts suitable for use with Draw and DTP programs. Trace and D2Font allow anyone with a scanner to make their own fonts from printed examples. Examples of Trace and D2Font included.

Disc 7 - Chess Program for The Archimedes.

A Chess program that takes full advantage of RISC OS, installing itself on the icon bar and running on the desktop in a window. You can work with other programs whilst you play Chess. Many features, computer play, hint, save games, edit etc. Risc User July 1991 said: *"Chess is an absolute bargain. .playing at a comparable level it always beat Micro Power's offering. ...this has to be the one to go for".*

Disc 8 - CrossStar 2.XX Crossword puzzle solver

Fully RISC OS compliant desktop Crossword puzzle solver. 200,000 word dictionary. Solves interlocking clues. Editable/user definable dictionaries. Saves grids as Draw files. Browse through dictionary. Check grid for new words.

Disc 33 - Panorama. Your window on the World!

180,000 coordinates outlining the lakes, rivers, continents, state boundaries etc. of the World and a program that can produce Draw files from them. You can make maps of any part of the world and then use them in DTP etc. programs. Includes the positions of nearly 1000 cities. Does simple, cylinder, Mercator and perspective projections. Can be used from a single floppy disc and requires no setting up.

Disc 34 - ArcFS. Compressed filing system.

Allows files to be stored in archives in much less space, but because it is a true filing system, programs will work exactly as normal. Read/write, so you can write files back to archives. Files can be encoded for security. Reads Spark archives.

Disc 19 - StarChart. Star maps.

Program that uses a database of 9000 stars etc. to produce star maps. Also calculates the positions of the planets and shows them on the maps. Star maps are in the form of Draw files and can be imported into !Draw, Ovation etc.

Clip Art Packs

Each pack, consists of three discs, full of black and white sprite format clip art. Spark archives, mean every pack has many 100's of files and Mega bytes of data. Suit Impression, Ovation etc.

Pack #1:	Alphabets (decorative letters), Anatomy, Animals, Astrology, Books, Egyptian, borders, snippets of text, pointers (hands and arrows), cards.
Pack #2:	Assorted cartoon characters. Escher, Flowers, Foods, Miscellanea.
Pack #3:	Music, Monsters, Mythical and religious beasts. People (assorted people plus celebrities). Space, space-travel, and space exploration.
Pack #4:	Heads, Christmas/Easter, Transport - cars, boats, trains, planes. Logos+icons.
Pack #5:	Victorian woodcuts. Whimsy - cute pictures. All sorts of sports.
Pack #6:	Cartoon characters, grey scale pictures, religious, assorted bits, famous people, people/ characters, animals/creatures, office items, signs

Discs are £5.99 each, all inclusive. Buy four claim a fifth one free!
Clip Art Packs are £5.99 each, all inclusive.

David Pilling, P.O. Box 22, Thornton Cleveleys, Blackpool. FY5 1LR.

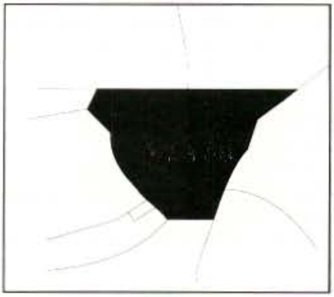
Free Air Mail delivery on overseas orders. Extensive range of other Archimedes software available (programmers tools, games, utilities, clip art), please send for free list.

Draw File Street Map Processor

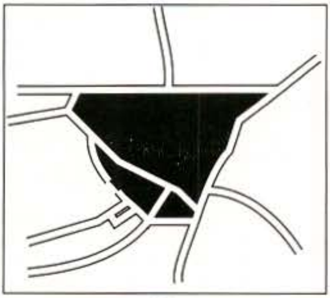
by Kell Gatherer

This application converts sketches made with Draw into viable street maps.

Just draw a simple plan using single lines for all the roads, and let the map processor do the rest. It will flesh out the single lines into realistic looking roads and junctions.



Before



After

If accuracy is important, it is also possible to load a text co-ordinates file prepared in Edit, which will be converted into a Draw file by StreetMap. There is such an example file included on the disc with full instructions.

Overall this is a very handy application - see the example, buy the disc and become a cartographer overnight! *RU*

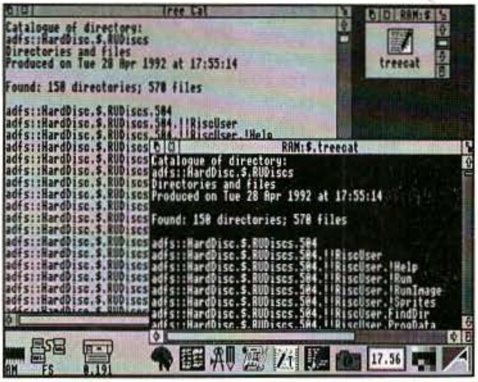
For reasons of space, these applications are only available on this month's magazine disc.

TreeCat

by Bill Hine

The RISC OS Wimp system of windows and icons is superbly user-friendly, but there are times when it would be useful to have a readable list of all the objects (files and directories, including applications) contained in a given directory and its sub-directories. TreeCat fills this gap and does a lot more besides.

Simply drag a directory to the TreeCat icon and a window opens containing a list of the names of all the objects in that directory and in all its sub-directories. The menu allows the user to choose whether to list directories, files, or both, and whether to include the filetype and/or datestamp of each object. An object's name may appear in either full or partial pathname form.



```
Catalogue of directory:
adfs::HardDisc.$.RUDiscs
Directories and files
Produced on Tue 28 Apr 1992 at 17:55:14

Found: 150 directories; 570 files

adfs::HardDisc.$.RUDiscs.504
adfs::HardDisc.$.RUDiscs.504.!!RiscUser
adfs::HardDisc.$.RUDiscs.504.!!RiscUser.!Help
adfs::HardDisc.$.RUDiscs.504.!!RiscUser.!Run
adfs::HardDisc.$.RUDiscs.504.!!RiscUser.!RunImage
adfs::HardDisc.$.RUDiscs.504.!!RiscUser.!Sprites
adfs::HardDisc.$.RUDiscs.504.!!RiscUser.FindDir
```

A window displays all the information requested, and the contents of the window can be saved as a text file for printing or further manipulation. Overall, this application can supply all the information you will need about your directory contents and structure, and it is all done in an easy-to-use multi-tasking manner. *RU*

Base
5

Base5 DBMS v2.00

Base5 DBMS is a suite of BASIC V functions and procedures designed to implement database programs. Now upgraded to v2.00, it remains fully compatible with RiscBASIC and ABC compilers.

- Fully compatible with RISC OS, with Wimp Interface support
- User configurable to optimise memory
- Extensive search features using a novel "data filtering" principle
- Multiple databases in use simultaneously with easy communication between them
- Rigorous in-built error checking and Command History
- Comprehensive documentation of tutorial material, language reference and file format
- Extensive import and export features
- A separate library of mathematical and calendar functions
- A fully multi-tasking database application !Base5 as a get-you-started entry point

AdMaths £25.00 Requires DBMS

A RISC OS application and three BASIC V libraries of advanced mathematical and statistical routines.

- Skewness, Pearsonian and Kurtosis indexes
- Median, Mode, Quartiles and Trimeans, Geometric, Harmonic and Quadratic means
- 3 non-linear Least Squares best fit plus Harmonic curve fit by Fourier analysis
- Fully programmable graphics routines for Pie, Bar, Line, Scatter, etc, diagrams
- Export of graphs as Sprites or Draw files for easy inclusion into DTP
- Separate library for any BASIC program to export graphically as Sprites or Draw files

PairData £22.50 Requires DBMS

A specialist multi-tasking application and BASIC V library for the creation and processing of two dimensional coordinate pair data.

- !MouseIn, a fully multi-tasking utility to write pointer coordinates directly into databases
- Centre of Gravity, mean distances, nearest and furthest point calculations etc.

MailMerge £10.00 ****NEW**** Requires DBMS

A RISC OS compliant application and BASIC V library to merge text with databases to produce mail.

- Output options to ease interface with word processors, printers and DTPs
- Merges data from multiple databases
- Programmable delimiter characters
- Special date, time, serial number and file name merging facilities
- Direct insertion of control sequences into !Edit windows

WordStock £25.00 ****NEW****

This fully multi-tasking stand-alone application uses database technology to directly insert often used words, phrases and specialist text into !Edit or DTP windows from single key presses. You can define up to 77 personal lexicons, each containing over 300 entries.

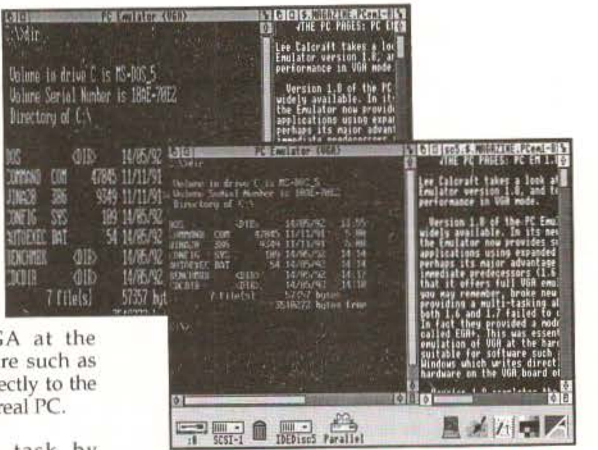
Base5
P.O. Box 378
WOKING
Surrey GU21 4DF
Great Britain

Base5 DBMS	**£69.00**
Demo Disc	**£5.00**
	refundable on purchase of DBMS
	No V.A.T.

The PC Pages: PC EM 1.8 and VGA

Lee Calcraft takes a look at the new PC Emulator version 1.8, and tests its performance in VGA mode.

Version 1.8 of the PC Emulator is now widely available. In its new incarnation the Emulator now provides support for applications using expanded memory, though perhaps its major advantage over its immediate predecessors (1.6 and 1.7) is that it offers full VGA emulation. 1.6, you may remember, broke new ground by providing a multi-tasking ability, but both 1.6 and 1.7 failed to offer full VGA. In fact they provided a mode which Acorn called EGA+. This was essentially an emulation of VGA at the hardware level, suitable for software such as Microsoft Windows which writes directly to the the hardware on the VGA board of a real PC.



```
C:\>dir

Volume in drive C is MS-DOS_5
Volume Serial Number is 18AE-70E2
Directory of C:\

DOS          <DIR>     14/05/92
COMMAND  COM     47845 11/11/91
JINA28   386      9349 11/11/91
CONFIG   SYS       109 14/05/92
AUTOEXEC BAT        54 14/05/92
BENCHMRK     <DIR>     14/05/92
CDDIR        <DIR>     14/05/92
        7 file(s)    57357 byt
```

Figure 1. VGA in Desktop mode 12 & 28

Version 1.8 completes the task by implementing VGA at both hardware and operating system level (i.e. at the level of the BIOS). This means that software hitherto debarred from working with the Emulator just because it uses VGA can now join the growing list of applications that work with the Emulator.

Version 1.8 is supplied with a new manual in a neat and sensibly-sized pack, which also holds four discs:

1. Multi-tasking CGA/EGA/VGA Emulator
2. Single-tasking CGA Emulator
3. MS-DOS Version 3.3
4. CD-ROM Support Disc

If you are upgrading from an earlier version, you only get discs 1 and 2 and the new manual - and there is still no DOS manual with the package, regardless of whether you are upgrading or not.

Since we have reviewed version 1.6 quite recently (RISC User 4:10), and in the last two issues we have run articles on using the Emulator, there is little need here for a blow-by-blow account of the installation and use of 1.8. I will concentrate instead on VGA as provided by the new Emulator - but not without a passing moan about the way it turns off both Caps and Number lock when it boots, and forcibly reconfigures the sound voice.

USING VGA

VGA stands for Video Graphics Array, and the IBM VGA standard offers a total of 17 different screen modes. The highest resolution modes provide 640 x 480 pixels in 16 colours chosen from a palette of 256K (i.e. from 262144 colours). An alternative mode offers 256 colours on screen at the same time, again selected from a 256K palette, but at the reduced resolution of 320 x 200 pixels.

While these pixel resolutions are within the capability of an Arc with a multi-sync monitor, the extent of the VGA palette well exceeds the Arc's 4096 possible colours. This is not too terrible, since the Emulator just picks the closest colour within range, and for many pieces of software, an altered hue or two is not a disaster.

In fact the Arc provides four modes specifically designed for VGA use (modes 25-28). All of these provide a resolution of 640 x 480 pixels, while the best of these - mode 28 - is a 256 colour mode requiring 300K of memory.

So how does the new Emulator fare? The short answer is: reasonably well - though if you forget to select a high resolution Desktop mode, the Emulator does not complain, it simply uses a bigger screen. That is to say it makes its window the required number of pixels in height and width regardless of the mode you are in.

	33MHz 486	PC Em	Factor	Mode
Graphics	2.2s	52.2s	23	28 V
Intmath x10000	1.8s	51.1s	28	28 V
ditto	1.8s	45.5s	25	12 V
ditto	1.8s	44.6s	25	12 C
ditto	1.8s	42.7s	24	12 C*

Table 1. Timings in secs for Graphics screen, and for IntMath benchmark. Mode is Desktop screen mode (12 or 28), V or C means PC Emulator in VGA or CGA mode. C means CGA non multi-tasking.*

Thus if your Desktop is in mode 12 you can still run VGA, but even with the PC's window at full stretch you will only see a small part of the screen, and text will appear incredibly tall (see fig. 1). The manual does not seem to cover this, and when I tried the EGA+ mode on 1.6 some time ago I gave up in despair because the scrolled window made it impossible to use the DOS command line. However, selecting Desktop modes 27 or 28 does wonders. But you do need a lot of RAM for this. In VGA mode the Emulator absorbs a massive 2080K of RAM on top of the 300K you need for a mode 28 Desktop.

COMPATIBILITY

To test the VGA compatiblity of the Emulator, I ran a number of programs which I had compiled using Microsoft's C/C++ Compiler version 7.0. The compiler's run time libraries contain a set of dedicated graphics functions for setting VGA modes and drawing graphics and outline and bitmapped fonts. These all worked well with one exception: the C function *_setvideomoderows()* failed when attempting to put the Emulator into VGA mode. It failed even when used in 30-line mode - a mode normally supported by the Emulator. The Microsoft compiler is used in the creation of much PC software, and if this function is used in its source code, the application will not run - but Acorn are looking into this.

Another test which the Emulator failed on was the response to the MS-DOS *MODE* command. I was using DOS version 5 (more on this in a future issue), which provides the command:

```
MODE CO80
```

to put you in an 80 column colour mode. This fails on the Emulator 1.8 with the message: Function not supported on this computer. This is not serious in itself since no software is going to be issuing this at the DOS prompt. It does mean however, that the particular BIOS or hardware access produced by this call fails on the Emulator.

TIMINGS

Using VGA may have implications for timings, and since the major gripe with the Emulator is its slowness of foot, I checked this out with some benchmarks. I have not used completely standard benchmarks for this because they tend to rely on the internal clock of the computer, and it has been claimed that the emulated clock results in unrealistically low benchmark timings for the Emulator.

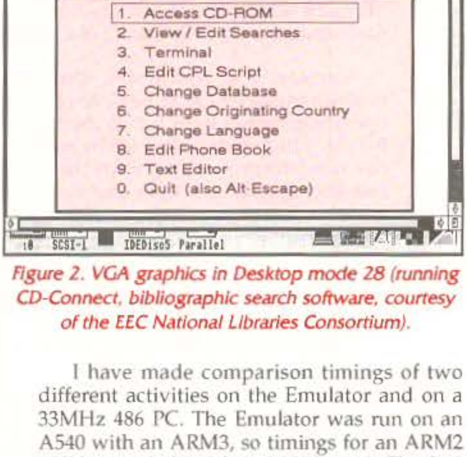


Figure 2. VGA graphics in Desktop mode 28 (running CD-Connect, bibliographic search software, courtesy of the EEC National Libraries Consortium).

I have made comparison timings of two different activities on the Emulator and on a 33MHz 486 PC. The Emulator was run on an A540 with an ARM3, so timings for an ARM2 will be worse by a factor of about 3. The first task was to redraw a graphics screen containing raised boxes and text in (pre-loaded) bitmapped fonts.

The second was the standard PCW Intmath benchmark, but with the calculation loop set to ten million rather than one thousand iterations. This slowed things down enough for me to use a stopwatch. As you can see from the table, the Emulator came out some 25 times slower than the 486, and nothing makes much differece to this, whether it be in type of activity (drawing graphics or number crunching) or screen mode, or whether the Emulator was multi-tasking or not.

In case you are thinking that a factor of 25 or so represents a very bad score, two things must be borne in mind. First of all there is a massive overhead in emulating one processor using another. Secondly, the PC against which the comparisons have been made here is a top of the range machine.

Similar tests on verson 1.6 of the Emulator in CGA mode with the Desktop in mode 12 gave a similar speed factor of 25 on an A540. In other words version 1.8 clocks in at the same speed as 1.6, with virtually no overhead for running VGA. Previous comparisons therefore still apply: on an ARM2 the Emulator runs a bit slower than an XT with an 8088 running at 4.77 MHz.

As a matter of interest, running the same Intmath benchmark on the A540 in native mode took 2.6 seconds - some 40% slower than the 33MHz 486 PC. This tallies with Arcon's claim that the 540 runs at about the speed of a 25MHz 486. I must add however, that this is not a reliable measure of relative speed because although the two machines used the same source code, you can't use the same compiler: the PC version was compiled on Microsoft C version 7, while the Arc version was compiled with Acorn's DDE compiler (version 4). Incidentally the two final executables were of comparable length (6.8K on the PC, 5.5K on the Arc).

Product	*PC Emulator 1.8*
Supplier	*Any Acorn dealer*
Price	*£116.33 inc. VAT.*
Upgrades	*June 1st to Sept 1st only. Contains manual & Emulators but not MS-DOS or CD software.*
Price	*From 1.6 or 1.7 £10.58 inc. VAT or £34.08 from earlier versions.*
Supplier	*Acorn Direct, 13 Denington Road, Wellingborough, Northants, NN8 2RL. Upgrades require original disc as proof.*

RU

Is Your Printer/Plotter Slowing Down Your Arc?

TECHSOFT DATAMATE

Technical: *Data Capacity 1, 2, 4 or 8Mb (upgradable) : One Centronics input/output : Single copy mode : Multi-copy Mode : Selectable auto form feed between copies: Self test mode: External mains power supply.*

TECHSOFT UK Ltd., Old School Lane, Erryrys, Mold, Clwyd, CH7 4DA Tel: 082 43 318 Fax : 082 43 564

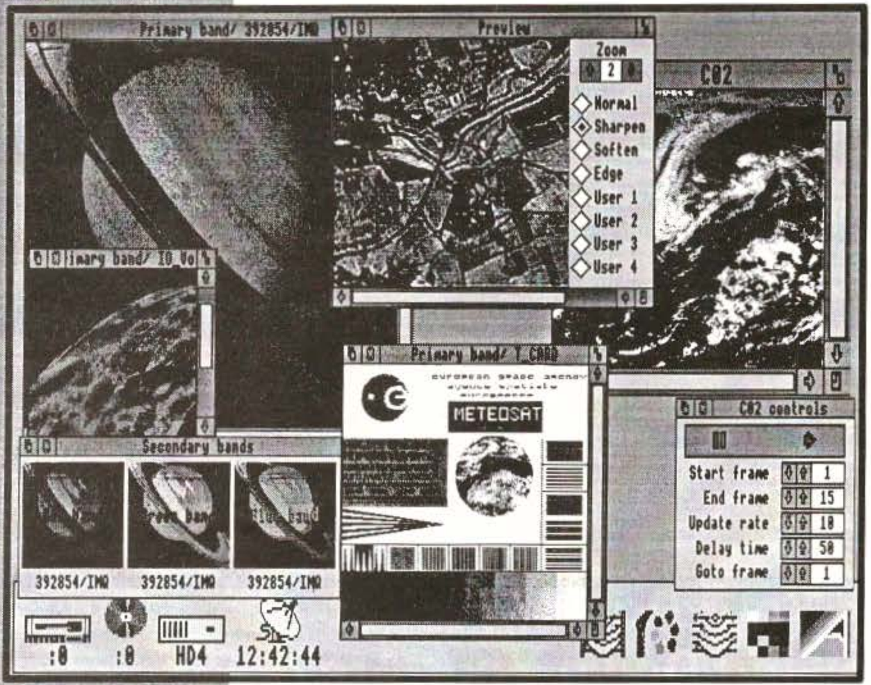
ARC PRODUCTIVITY TOOL

Datamate is an external buffer, an "in between" device which accepts data at high speed from your computer, then releases it to your printer/plotter as required. Thus your computer is freed as quickly as possible whilst your printer/plotter carries on independently, allowing you to move on to the next job as soon as possible. The multi-copy mode allows any number of copies to be printed, independent of the computer. The single copy mode is ideal for plotters / vinyl cutting / engraving, etc. Datamate is available in 1, 2, 4 and massive 8Mb versions, thus coping easily with even the most data intensive applications, DTP, spreadsheets, databases, CAD, etc. In short, Datamate is the ideal companion for all Centronics output devices.

SIZE	1Mb	2Mb	4Mb	8Mb
PRICE	£195	£230	£295	£425

All prices + £8 p&p. + VAT

EARTH FROM SPACE or SPACE FROM EARTH



Start frame 1
End frame 15
Update rate 10
Delay time 50
Goto frame 1

The Weather Desk

plus...

PDS view movie

Planetary Data System

and...

!Orrery

Please write or telephone for complete details about our wide range of space science resources for the archimedes, including the new image processing package,PDSview that gives access to the massive databank of NASA images that have been released as well as providing powerful processing for weather satellite or any other digital image. Over 27000 raw data images are available from us on CD-ROM. Also ask about the award winning !Orrery application which brings the planetarium into your home or classroom.THE WEATHER DESK weather satellite software which is compatible with existing hardware will be out soon. This allows up to six animation sequences, with unlimited frames, to be collected concurrently on the desktop as a background task. This is truly a BREAKTHROUGH in the field of meteorological satellite image data collection.

spacetech

space science resources

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Orrery

Sheridan Williams reviews Spacetech's Orrery package which claims to bring the planetarium into your own home or classroom.

INTRODUCTION TO SKY SIMULATORS

Public perception of astronomy has received a boost recently with the claim that remnants of the original Big Bang have now been detected. Far from being a dull subject that requires you to sit for hours on end on cold nights peering through a telescope, astronomical equipment (like computers) is advancing at a rapid rate. For example CCDs (Charge Coupled Devices) are now within the reach of amateurs. These devices attach to the eyepiece of a telescope and gather more light than the eye or even photographic emulsion can. They are digital devices and I need say no more about the advantages of this. With a computer linked to a home telescope it can perform the dual functions of driving it and collecting the image, and you can sit in your warm study and work. CCDs are not new technology; in fact many people are unaware that CCDs have been used in CamCorders for quite a while now.

Fig. 1a Earth

Fig. 1b Saturn

Astronomy packages have existed on PCs for quite some time and can be classed in three main categories:

1. Guiding the telescope
2. Image collection and processing
3. Simulating the sky

I have discussed the reasons for using the first two applications, but why would someone need to simulate the sky? There are many reasons for this such as predicting coming events, checking on historical records, locating an astronomical object, checking the visibility of an event from a particular location, or just familiarising oneself with the sky. Several PC packages combine tasks 1 and 3 so that having once located the object you wish to study you can press a button and your telescope will be driven to find the object, and once found, locked onto and guided all night if necessary.

THE ORRERY PACKAGE

Orrery, from Spacetech Ltd. is an Archimedes based application for simulating the sky. The package consists of a floppy disc and 40 page manual. This gives the major advantages of a simulation package, that: "... time can be accelerated or reversed, distances can be scaled down, and the viewpoint can be altered from the Earth to anywhere within or outside the Solar system". The disc is not protected so copying to a hard disc is easy. However, each disc is encoded with a serial number allowing illicit copies to be traced. Site licences are available, as is a set of teaching exercises for school users.

Orrery was not designed as an all-sky simulator; basically it is a Solar system simulator with enhancements. Nevertheless stars and their constellations can be displayed and identified, but this is about all that can be done with them. Nebulae, galaxies and other deep sky objects are not shown. However, the actual images of the planets can be displayed scaled to your requirements, adding greatly to the effect - see figure 1. Orrery works in two modes - Geocentric (Earth centred), and Heliocentric (Sun centred) and these will be discussed separately, but first there are controls that apply to both models.

Fig. 1c Jupiter

CONTROLS

Any date in the past or future may be set using the menu option Preset Time. The Control Panel allows the observer's viewpoint to change, for example when in Geocentric mode you can specify that you want to look due north at an angle of 20 degrees up from the horizon. When in Heliocentric mode the Control Panel similarly allows your viewpoint to change so that you may look down on the plane of the planetary orbits for example. The Control panel also allows time to be accelerated from 1 minute increments to increments of many years, either forwards or backwards in time.

Other options give you control over planet size; representation of orbits, shown solid, fading, with variable brightness and contrast, or not at all; stars to be shown or not; constellations joined up; and planet lock. You can even disable multi-tasking (called Full Screen) to speed up the application. Two extra features are available from the icon bar menu: "Ephemerides" which gives the setting table shown in figure 2, which can be output for later use as a Draw file; and "Planets" which shows the true scale of the distances between the planets. For some reason this cannot be output as a Sprite or Draw file.

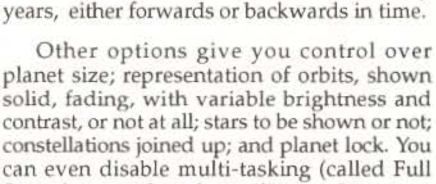
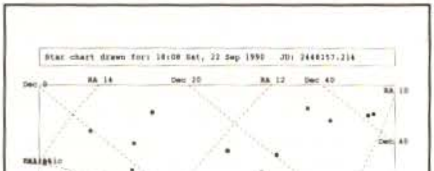


Figure 2. Ephemerides planet rise & set chart

GENERAL OPTIONS

Several features apply to both models, such as the ability to adjust the displayed size of a planet; and as the planets' images are taken from real images they look very realistic. You may also click on any object to obtain relevant detailed information, and produce Sprite and Draw files of most images for use in other packages such as Ovation etc. Planetary data include dynamic information such as the current distances to the Sun and Earth, elevation, right ascension, declination etc. In addition, clicking on any star which forms part of a "joined up constellation" reveals a detailed map showing all the stars in that constellation along with their names.


Star chart drawn for: 18:00 Sat, 22 Sep 1990 JD: 2448157.214

Latitude : 51.3 deg.
Longitude : 0 deg.
Offset from GMT : 1 hour
Central elevation : 0 deg.
Central azimuth : 270 deg.
Lunar phase : Thin crescent
Elevation of Sun : 7.12 deg.

Star magnitudes : ● -2 ● -1 ● 0 ● +1 ● +2 ● +3 ● +4

Figure 3. Geocentric view of the sky showing grid lines, stars and planets.

GEOCENTRIC MODEL

Of the two available models, the geocentric one as its name implies gives you a view of the sky from any place on Earth, on any date in the past or future. Spacetech have devised a very neat way using crosswires which enables you to select your geographical location on the Earth. The date and time are also easy to select. Using these features allows you to produce tailor-made sky charts (as Draw files) for any date, time or location on Earth. This chart can be enhanced to contain grid lines for right ascension, declination and the ecliptic; joined up constellations; and planets larger than actual size (see figure 3).

All kinds of simulation are possible: for example, you could simulate the midnight sun at the poles and witness the fascinating path it follows in the sky, or examine how the position of the rising sun changes daily throughout the year at Stonehenge.

One aspect I immediately tried to simulate is the next total solar eclipse visible from the U.K. It will occur on 11th August 1999 at about 11am and visible only from Cornwall. Orrery shows the Moon partially covering the Sun during this eclipse, but it never completely covers it. Also the same effect appears regardless of your location on Earth. When I asked Spacetech about this they said that the size of the Moon and the Sun have been exaggerated to produce a comfortable appearance on the display, and constraints to allow the application to run at speed on standard machines precluded specialist eclipse calculations.

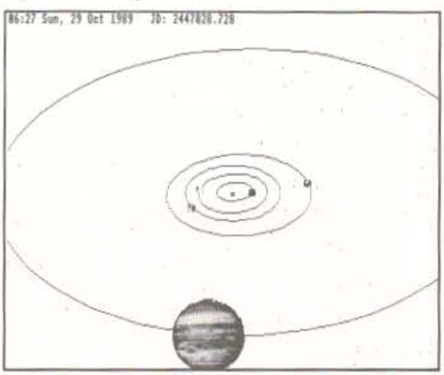
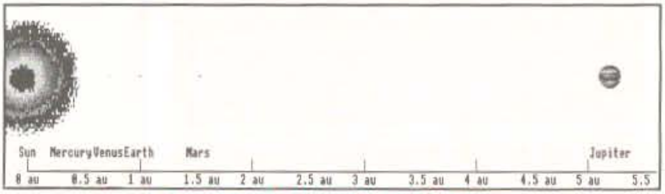


Figure 4. Heliocentric view of the Solar System from just outside the orbit of Jupiter.

HELIOCENTRIC MODEL

The heliocentric model allows you to view the Solar system from anywhere in space. Besides the controls that determine your position in space there is also a zoom feature. The latter, together with the ability to disable a selection of planets, allows you (for example) to observe just the inner planets. By altering your viewpoint in space you can look along the orbital plane and see Pluto's marked orbital inclination. Looking down on the plane you can see Mercury's noticeable eccentricity, and also why for part of its orbit Pluto comes closer to the Sun than Neptune. Planet Lock is a very useful and intriguing feature. For instance, if you lock the planet Earth and view the Solar System from above you can study the apparent retrograde motion of the planets that so puzzled astronomers for centuries.



Cross-sectional view of the solar system.

CONCLUSION

There are a good many positive aspects to this package which have not been mentioned. It is ideal for educational use with a set of exercises to work through complete with pre-prepared model set-up files. Other set-up files provided illustrate terms such as conjunction, perihelion, opposition, twilight etc. supplemented by a comprehensive glossary in the manual. The majority of screens are all readily exportable via Draw and Paint files.

On the negative side, it took me a while to realise that I should be using a 256 colour mode such as 15 or 21 to render the planetary colours correctly. This was not stated in the manual. Also, when reverting from full screen (single tasking) to multitasking, it reverts to mode 15 regardless of which mode was in use before. I would also have expected a slightly better standard of editing in the description of the planets, with blunders such as: was'nt (sic), mixed use of km, Km and kmph, together with a distinct lack of apostrophes. I have several other niggles, but they are minor. All in all this is a very good package; shame about the high price compared with equivalents on the PC.

Product:	*Orrery*
Supplier:	*Spacetech* *21 West Wools,* *Portland,* *Dorset DT5 2EA.*
Tel:	*(0305) 822753*
Price:	*£111.63 (inc. VAT)*

Educational Site Licence: £150 (ex. VAT) RU

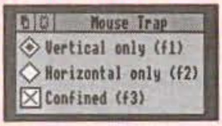
RISC User Disc Contents

Virtual Reality -

Free red and green gels with each disc!

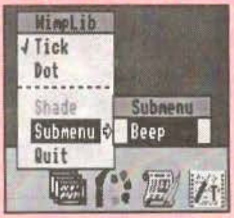
On this disc are five programs that use the method of stereoscopy to display scenes in three dimensions. The method requires a piece of green and a piece of red see-through plastic to see the animated 3D effect (supplied free with each magazine disc, subject to availability), and the effects are really quite realistic - it really feels as if the objects are hanging in space! The five programs display the following: one ball swinging in a cradle; two balls swinging in a cradle (the listing given in the magazine); a building; a piano keyboard showing three fingers with which you can play notes and chords; and a similar keyboard with a whole hand to move around.

MouseTrap: Confining Your Mouse



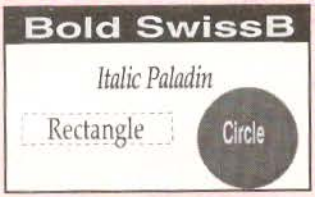
This handy little application allows you to confine the movements of your mouse pointer so that it only moves in either the horizontal or vertical direction; you can also use the cursor keys to move the pointer more accurately than the mouse can. This can be invaluable when trying to draw right angles in Draw, for example, and it is all acheived through a clear and simple window on the Desktop.

Wimp Function/Procedure Library Part 3



The third instalment of the Wimp Library deals with the creation of menus. The example application shows how to set up menus containing various types of entries (tickable and shaded items, dotted lines and submenus for example), and how to make them behave properly (like keeping a menu open when Adjust is used). The complete Wimp Library to date is included.

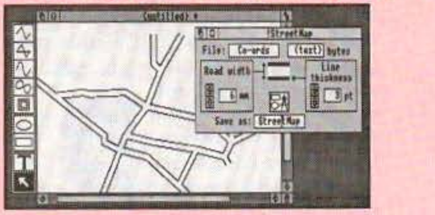
Creating Draw Files from Basic (Revisited)



An improved version of the program from the articles in RISC User 5:5 and 5:6. The new program has a couple of additions which allow more accurate calculation of bounding boxes for font objects.

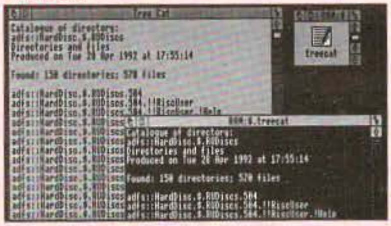
ADDITIONAL ITEMS REFERRED TO IN THE MAGAZINE

Producing a Street Map Using Draw



This application takes sketches made using Draw, and turns them into realistic street maps by fleshing out the lines into representations of roads. It can also take text files containing co-ordinates and create more accurate maps than is possible manually with Draw. The disc contains an example of each method, along with full instructions for the format of the co-ordinate text file.

TreeCat

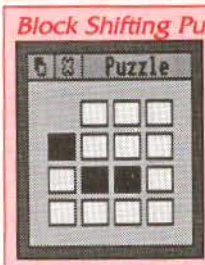


```
Catalogue of directory:
adfs::HardDisc.$.RUDiscs
Directories and files
Produced on Tue 28 Apr 1992 at 17:55:14

Found: 150 directories; 570 files

adfs::HardDisc.$.RUDiscs.504
adfs::HardDisc.$.RUDiscs.504.!RiscUser
adfs::HardDisc.$.RUDiscs.504.!RiscUser.!Help
```

Hard discs can contain many thousands of files with complex directory hierarchies. TreeCat can help you through this maze by printing informative listings of the contents of discs; these can then be saved away as text files. There is a host of options allowing specific items of data to be displayed (such as filetype, date stamp etc.), and the application can gather information from both floppy and hard discs.

BONUS ITEMS

Block Shifting Puzzle

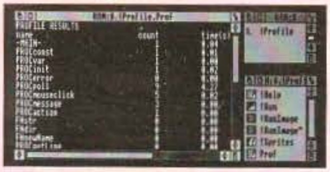


A Desktop puzzle that presents a considerable challenge. You must shift the blocks around the grid so that all the blocks are in their correct positions; a block turns red when it is in its correct position, and is white otherwise. Not for the faint-hearted!

All the applications in this month's magazine and a

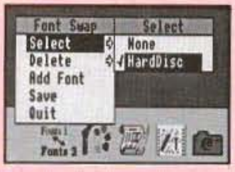
ly 1992

Basic Program Profiler



This application allows Basic programs to be analysed in terms of how much time each part of the program takes to execute. Dragging a program file to the icon bar icon produces a new version of that file; when run, this version outputs a text file which contains details of how much time was spent in each procedure/function, how many times each routine was called, and the total time spent running the program. The Profiler can therefore be an essential tool when trying to speed up programs, as it can identify bottlenecks in execution time.

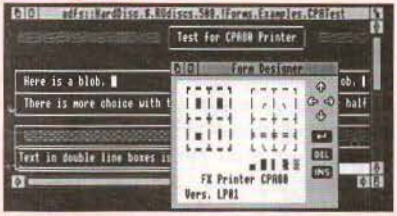
Font Swap Application



Keeping track of fonts when you only have a floppy disc system can be a headache, and if you have more than a handful of fonts discs, you can end up swapping between them endlessly, even with the simplest of jobs.

FontSwap allows you to keep track of multiple font discs via a friendly icon bar menu, and to have just one disc active at one time, thus avoiding the need to keep changing floppies around.

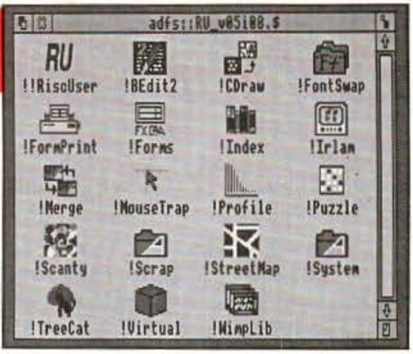
Extended Form Designer and Form Printing Applications



Forms is a version of the Form Designer application from the RISC User September 1991 disc, which now has support for the Epson FX/RX printers and the CPA80 printer. The Form Printing application allows forms designed with the Form Designer to be printed without having to set IBM emulation manually on the printer, saving a lot of time and effort.

ArcScan Data

ArcScan indexes for this issue of RISC User and BEEBUG Vol.11 No.2.

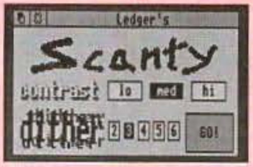


This month's disc menu

Sample Screendumps from the Irlam A4 Colour Scanner

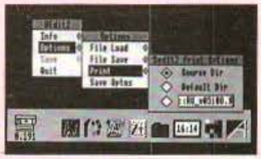
Two mode 21 sprites that show the excellent quality of output from this new scanner, reviewed in this issue.

Desktop Scanty: Improving Monochrome Scanned Images in the Desktop



Desktop Scanty is a multi-tasking version of the image procesing program from last month's RISC User which takes raw output from monochrome scanners and processes the sprites to improve their clarity. The various parameters can be selected simply by clicking on the relevant icons, and altogether the routine is now far more usable.

Wimp Interface for the Basic Editor



BEdit2 is an enhanced version of the popular BEdit application, which allows Acorn's Basic Editor to be accessed from the icon bar. This new version contains many new features which make the interface more friendly, such as the abililty to exit to the Desktop whilst editing a program, and then return to the Editor without losing the file. A must for those who need to use the Basic Editor from the Desktop.

selection of bonus items for only £4.75

Colour Scanning at Large —

Alan Wrigley takes a look at Irlam's A4 colour scanner.

Back in RISC User Volume 4 Issue 3, we reviewed Irlam Instruments' *i-mage* colour scanner system, based on the Sharp JX-100 scanner. This unit is able to scan originals of up to 160x100mm in size (approximately A6). Irlam has now expanded its range by releasing *ProI-mage,* based on the Epson GT scanner range and offering full colour scanning of A4 originals.

As well its A4 capability, the ProImage system is interesting for a number of other reasons. Firstly, the top of the range scanner, the GT-8000, will scan at a staggering 800 dpi resolution. Secondly, if you have an A5000 it is no longer necessary to fit an interface card, since the scanner plugs directly into the bi-directional parallel port. And thirdly, the system breaks the £1000 barrier (ex. VAT).

THE EPSON GT SCANNER

ProI-mage will drive all scanners in the GT series, which includes the GT-4000 (now obsolete), the GT-6000 and the GT-8000. The latter model was supplied for this review. The scanner is a hefty brute, about as large as an average laser printer (though not as heavy), so plenty of desk space is required. The GT-6000 offers resolutions of up to 600 dpi, and the GT-8000 of up to 800 dpi as mentioned earlier. One notable difference between these scanners and the JX-100 is that only one pass of the head is required to scan a colour image, which greatly increases the speed of operation.

THE ARCHIMEDES CONNECTION

The parallel port on the A5000, unlike its predecessors, is bi-directional, and Irlam has taken advantage of this to drive the scanner via a cable directly from this port without the need for an expansion card. This keeps the cost down, resulting in the sub-£1000 price tag when purchased for the A5000. For an extra £100 an interface card is available for the A300, A400 and A500 ranges. Fitting this card is quite simple.

Epson GT-6000 A4 Colour Scanner

THE ProI-mage SOFTWARE

The software supplied with ProI-mage is a much-improved version of that originally produced for the i-mage system. Resolution, gamma correction and sharpness can be set to a selection of values provided, or to a user-defined value within a given range. A low-resolution monochrome preview scan is available to give you a rough idea of what the picture will look like. You can then select a precise area of the page to be scanned, and the main scan can be carried out in monochrome, 4-, 16- or 256-level grey, or full colour mode. You can select from a number of different output file formats (e.g. TIFF, JPEG etc.), and when the scan is completed the resultant image can be saved in the chosen format or as a sprite.

The software is now fully multi-tasking throughout the scanning process. This is very useful, since although the Epson scanner is quite fast, it can still take some time to scan a full page at a high resolution.

Large high-res images also take up a lot of memory, so the software can spool directly to disc while scanning if necessary. While on the subject of memory, Irlam recommends a machine with at least 2 Mb. And if you want to do any serious work with the scanner, a large hard disc is essential - for instance, an A4 page at 400 dpi requires a file of around 40 Mb (yes, forty megabytes) to hold the raw scanned data during the process, and even the resulting sprite comes out at 16 Mb if you are using mode 21.

IMAGE PROCESSING

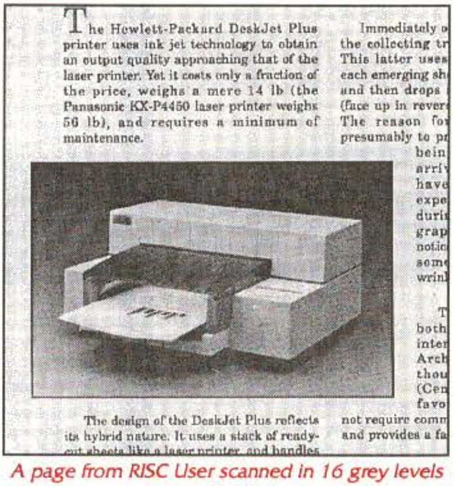
I was a little disturbed at first to find that the ProI-mage software has only very rudimentary processing facilities, allowing only gamma and sharpness values to be altered, and no facility for pre-scaling the image. However, Irlam markets its own image processing software, *Alter i-mage*, and this has facilities far beyond those provided with most scanner systems. Although it would be convenient to have these facilities available at the time of scanning the image, Irlam takes the view that it is preferable to maintain the full 24-bit data from scanner to disc, to allow for the widest possible range of post-processing, and also for transfer to other computer systems. For professional use this approach makes a great deal of sense.

Alter i-mage will accept files in all the common image formats, including TIFF, JPEG, Clear, sprite, YUV and Draw, and will also export all of these except Draw. All internal processing is carried out on 24-bit data, so all images retain the maximum quality regardless of the format in which they are imported or exported.

The package provides all the processing facilities you would expect for scanned images - gamma correction, sharpening, cropping and 90-degree rotation. Pre-scaling is planned for inclusion very soon (but for the moment you can of course use ChangeFSI). You can also overlay one image on another, using a mask if necessary to influence the degree and areas of overlay.

RESULTS

Among the tests I carried out was a direct comparison between the GT-8000 and the Sharp JX-100 by scanning the same picture at 200 dpi on each. There was a marked difference in the result - the image from the Epson was much sharper and the colours were more natural. If this is typical of all the scanners in the range then I am extremely impressed with the Epson. It is also very fast - 43 seconds for a 70x45mm image at 200 dpi, compared with nearly 6 minutes for the Sharp. The larger the picture and the higher the resolution, the greater the time taken of course, but at least the whole process multi-tasks.



The Hewlett-Packard DeskJet Plus printer uses ink jet technology to obtain an output quality approaching that of the laser printer. Yet it costs only a fraction of the price, weighs a mere 14 lb (the Panasonic KX-P4450 laser printer weighs 56 lb), and requires a minimum of maintenance.

The design of the DeskJet Plus reflects its hybrid nature. It uses a stack of ready-cut sheets like a laser printer, and handles

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A page from RISC User scanned in 16 grey levels at 200 dpi

CONCLUSIONS

Overall this is a very impressive package. I could find no fault with the scanner or the software, and taken as a whole it should prove very useful to those who need its facilities.

Product	*ProI-mage A4 colour scanner*
Supplier	*Irlam Instruments Ltd.* *Brunel Institute of Bioengineering,* *Brunel University,* *Uxbridge UB8 3PH.* *Tel. (0895) 811401.*
Price	*£1173.83 (£1585.08 for GT-8000)* *A300/400/500 interface card: £115.74* *All prices include VAT.*

RU

Euclid
is the most widely used 3D graphics system for the Archimedes.
It allows you to design and model any set of objects quickly using tools which are similar to those used in Draw.

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control by
Mogul
gives the most widely used 3D animation system.
Films can be planned using a spreadsheet indicating just the key positions of moving objects including cameras.

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Tween
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Files can be imported from any package which can produce a draw file for example graph drawing or font bending packages.

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the ideal way to convert sprites into films or join films together.
All Ace products allow import and export of either Sprites, Drawfiles or Ace films (the leading standard)

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ArcLight
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Into the Arc

Upgrading the PC Emulator on an A5000

Margaret Penfold reports further on her experiences of upgrading to an A5000 - this time with reference to the PC emulator.

Early in 1992 I upgraded both my old PC emulator and DR DOS. I had purchased my first PC emulator and DR DOS very little more than a year previously at a time when I did not own a hard disc. I was never comfortable using either application from a single floppy disc drive. The emulator was temperamental, and the instructions in the manual did not tally with what actually had to be done. Also, DOS, when finally installed, took over the whole machine. In addition, I did not find it easy getting the information I needed from the DOS User's and Reference Guide that came with the disc.

Occasionally I dabbled at a DOS-based shareware adventure game, and another member of the family used the emulator to upgrade his CV. Then, in December 1991, I exchanged my A3000 for an A5000.

The A5000 makes some of the functions of a DOS emulator obsolete. It can read text files from DOS formatted discs so that they can be edited on a word processor and returned to DOS discs in ASCII form. It was only when I got out my old emulator to test if DOS could read the files that had been edited on RISC OS applications that I realised the old emulator would not work on an A5000 and that if I wanted to use DOS again I would have to buy an upgrade.

Had I any real excuse for spending money on an emulator upgrade? I was 99% certain I could produce text on an A5000 and transfer it to an ordinary PC - but there remained the niggling doubt.

I found three extra reasons for upgrading:

1. The new DR DOS 5 manual might help me use DOS intelligently.
2. I would be able to play with my single DOS-based adventure game.
3. All the freebie programs taped onto the new giant computer magazines would become accessible.

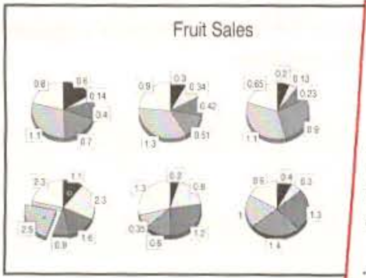
I ordered the upgrade. I received not just one emulator but two: one, not multi-tasking, for use on 1 Mb machines, and the other for use on machines with at least 2 Mb of memory. The instructions said that only one could be installed at a time, so I chose the multi-tasking version. There were no problems at all with installation, and it all went according to the manual. The instructions advised choosing at least 2 Mb for the hard disc partition, so I chose 4 Mb to be safe. The partition quickly got rather cluttered especially as it was difficult to disentangle what came originally with DR DOS 5 and what some freebie programs added as not particularly useful enhancements. It is not easy to enlarge a partition once it has been set up so I later created a second 2 Mb partition to use as temporary accommodation for programs that had to be expanded before use. It made it much easier to keep track of what was actually being added.

With a 2 Mb A5000, DOS only just multi-tasks. All luxuries such as the printer driver and a large memory mode have to be dispensed with. It is possible to dart about between RISC OS and DOS, transferring files and consulting directories, but no other applications can be run until the emulator has been told to

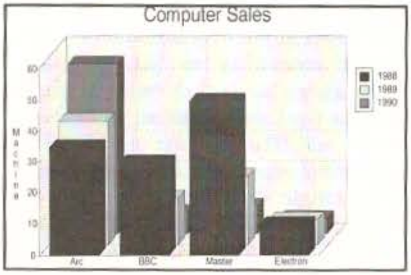
ChartWell

A sophisticated Graph and Chart Package at an affordable price

ChartWell offers **24 different graph types** including:
- horizontal and
- vertical bar charts,
- line graphs,
- scatter charts,
- polar plots,
- pie charts.



ChartWell allows a variety of **display options :**
- flat or 3D bar and pie charts,
- user choice of angle for 3D pie chart display,
- clustered, stacked or layered bar charts,
- scatter graphs with choice of curve fitting techniques, regression lines and correlation coefficients, and use of error bars,
- line graphs with choice of normal, cumulative area or stacked area displays.



Acorn User

...ChartWell: simple but effective.

...ChartWell scores on simpler controls over the basic graph types. It also has enough effects to present material prettily at a price that makes it attractive to the home or school user....

...All the options chosen can be saved in a 'Style Sheet file which makes it remarkably easy to create the same type of graph again...

Archive

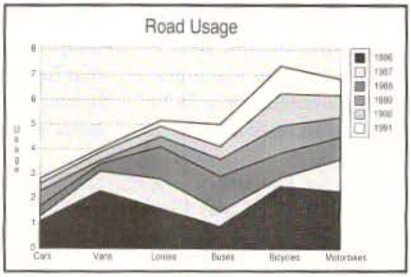
...This program from RISC Developments uses a really clever approach exploiting the desktop philosophy to the full.

Data can be imported from other applications, such as spreadsheets, databases, or created with a suitable editor as a text file.

Output is in standard Draw format for import into Draw or any other application, DTP for example.

Use of **'style sheets'** allows a set of options to be saved with data for future reference. User choice of start-up options.

ChartWell gives you **complete user control** over:
- choice of colour,
- data point styles,
- bar widths and spacing,
- use of titles and labels,
- legends to provide a key,
- graduated and shaded backgrounds,
- scales and tick marks, etc.



Flexibility

ChartWell allows you to select only part of the data for display. You can also change the order of display - a useful feature when creating bar charts - data can be arranged in ascending order so long bars will not overlap shorter ones.

Chartwell is supplied with an Outline Font Manager and Swiss-B outline font.

The disc includes demonstration data and graph files.

The package is supplied with a full reference manual with an introductory tutorial section.

Price **£24.95** (inc.Vat) to RISC User members and **£29.95** (inc.Vat) to non-members. P&P is extra. Stock Code **PCHW**

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quit. Once that has been done the machine needs to be reset completely before DOS can be used again.

I tried to add the smaller version of the emulator to my hard disc by temporarily renaming the first PC directory and creating a new one, but the small emulator wasn't fooled and insisted on installing DR DOS onto floppies. I have only one floppy drive and an aversion to constantly swapping discs, so the smaller version has remained untested.

As I suspected, DR DOS was perfectly happy with the text I had edited in Pipedream 3, saved in tab format and transferred to the DOS partition on hard disc. I had to reset a dipswitch on my printer from 'linefeed only' to 'linefeed + CR' before the PRINT command in the DR DOS Editor worked satisfactorily (Graham Kendall, in *Hints and Tips* for RISC User 5:5, describes how to add the CR to the linefeed before transferring text to DOS).

I was very pleased with the manual that accompanied DR DOS 5.0. It is quite user-friendly, and has helped me understand batch files and the functions of various DOS commands. For someone with no previous knowledge of DOS, this manual provides a good introductory course.

Of all the new features that have been added to DR DOS 5 I think the one Archimedes users will find most useful is the Editor. In the old DOS there was something called EDLIN which enabled you to edit single lines. The new Editor is a full screen text editor which works rather like Edit.

I now have easy access to my shareware adventure game. My conscience tells me I ought to send off the £9 the young inventor asked for in exchange for extra clues and save facilities. However, the game was so old when the magazine included it on its freebie disc that I fear the inventor, now quite ancient, won't want to know and has probably moved to the other side of the world. I have not acquired enough "freebies' to know if this is a common dilemma.

I bought a selection of the new PC magazines with attached discs. On the whole I found their standard of presentation primitive (one exception being the disc on the first U.K. version of *PC Magazine*). I found nothing I wanted that I could use on the emulator. Many of the applications are designed to make a normal PC work faster or extend its memory and are not always relevant to an emulation. Sophisticated business packages needing passwords costing hundreds of pounds before they are of any use sit alongside pop games with scripts targeted at seven year olds. Some games only work on PCs with larger than standard memory. I suspect they are put on the discs with the deliberate intention of demonstrating to users that their present hardware is out of date or needs expanding.

To sum up: the multi-tasking emulator needs a machine with at least 2 Mb of RAM. More RAM is needed if other applications have to run at the same time. The emulator is easy to use from hard disc.

An Acorn owner whose machine cannot write text to DOS-formatted discs or one who has a favourite DOS-based word processor, spreadsheet or datastore will find the latest emulator very useful. For my personal needs, unless any readers can demonstrate that there is good software out there that Acorn users are missing out on. I got my priorities wrong. I would have done better saving my money to buy extra RAM for my computer.

RU

Budget DTP on the Acorn Archimedes

Keith Powell looks at the latest book on "DTP" for the Archimedes.

Although the Archimedes User Guide explains how an Edit text file, with a formatting header, can be imported into a Draw window and the text laid out in columns much as in a DTP application, the explanation is brief and not easy to follow. However, the use of Edit and Draw (and also Paint) as a budget DTP system is now the subject of a book by Dabs Press.

Budget DTP on the Acorn Archimedes by Roger Amos, costs £12.95. It is intended for those who are interested in desktop publishing (DTP) but who cannot, perhaps, justify the purchase of a commercial DTP package. It contains about 190 pages of text including appendices, and describes how, with patience, you can use Edit and Draw to prepare documents which are more usually produced with commercial DTP packages. This topic was also covered in an article which appeared in RISC User 3:3.

The book is written largely to suit recent purchasers of an Archimedes computer. For those who may not have worked through the Welcome Guide there is a 17 page appendix which explains the principles of the Desktop, the mouse and the window icons, and other fundamental aspects of Desktop management. The main text gives details of the menus for Draw, Paint and the Printer Drivers (although, curiously, not for Edit), with explanations of how to use some of these applications, all with a bias towards budget DTP.

If you are new to the Archimedes you might feel like reading this book from cover to cover. However, the order in which information is presented may confuse rather than help. As a result, the book is perhaps one which it is better to dip into. If you are already familiar with the Archimedes and its applications you are unlikely to find much of interest in the early chapters, and you might be better to concentrate on those which describe the text file headers, multi-page Draw documents and special effects. You may also find some interest in the problem-solving chapter, and possibly in those on printers and reproduction.

WHAT THE BOOK COVERS

The book starts by detailing some typical problems found by users when trying budget DTP. The solutions are presented in later chapters. After briefly describing the historical progression from typewriters to DTP, the book gives a list of the minimum hardware and software considered necessary for budget DTP (which you probably have already). It recommends, if you do not already have them, that you should obtain the Outline Font Manager and a selection of outline fonts. The differences between outline and bit-mapped fonts are then briefly described and illustrated.

Under the heading of *A Quick Taste*, the book describes briefly the steps needed to prepare an Edit text file for importing into Draw where it can be laid out as required. There are references to later chapters covering text-formatting headers and the insertion of text objects and graphics in more detail.

Draw in Depth is the title of a confusing chapter which first lists and illustrates the four types of Draw object. It then describes the Draw menu options, apart from the Select option, which is covered later.

The four types of Draw object are then dealt with in more detail than before. Path objects are described first, using the main

Draw tools. The manipulation of Bezier curves is clearly explained and well illustrated. Text objects and text area objects (frames enclosing text imported from Edit) are also covered, and the book describes how to edit text after the layout of a document has been almost finalised. Sprite objects are covered in just two sentences.

Probably the most important chapter is that called *Edit in Depth*. After showing how to cope with several of the bugs in Edit, each of the back-slash commands is explained. Considering the chapter title and comparing it with *Draw in Depth*, it is surprising that there is no other information provided here about Edit. A description of the menus and principal techniques seems to be missing.

Bit-mapped, outline and anti-aliased fonts are now described in more detail, followed by a well-illustrated section on font directory organisation. The book describes how to rename fonts using the Font Editor, and how to cope with large collections of fonts.

The chapter which more experienced users will find most interesting is called *Page Layout*. After enlarging on the techniques for preparing and printing multi-page documents, this chapter covers methods of preparing tables before describing in detail the preparation of drop shadows, pie charts, three-dimensional bar charts, drop capitals, hanging indents, effects using FontFX, rotated text sprites and reversed-out text.

A chapter called *Sprites, Paint* and *Clip Art* explains the memory and printing-time problems associated with sprites. After showing how music in a Maestro window can be converted into a sprite, information is provided on scanners, digitisers, clipart sources (with four pages of illustrations), sprite attributes, palettes and transparency masks. The *Get Screen Area* facility of Paint is explained as is the technique for editing sprites and creating a window for a new sprite. Details of the sprite file, sprite, paint and edit menus of Paint are given so it is surprising that this section has not been called *Paint in Depth*, although an explanation of how to paint a sprite is absent.

There is some discussion of the resolution of 9-pin, 24-pin, inkjet and laser printers, and a description of the setting-up and operation of printer drivers. There are also suggestions to help speed up your printing. Photocopiers, offset litho printing, full colour work and spot colour separations are also covered, and there are useful hints on the preparation of masters for reproduction.

At the end of the book, there are solutions to 24 problems which might be encountered when using Edit and Draw, and when printing. A few details of Acorn DTP, Ovation and Impression are provided, but the detail on the latter is meagre. One appendix contains a useful glossary of DTP, printing and typographical terms, but an addendum gives minimal information about RISC OS 3.

CONCLUSION

If you are interested in budget DTP there is a great deal of interesting and useful information in this book. It is a pity, though, that the editor did not request changes to the sequence, and that many small errors remain.

Product	*DTP on the Acorn Archimedes* *A Dabhand Guide by Roger Amos* *ISBN 1 870336 11 9*
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Wimp Function/Procedure Library *Part 3*

by Mark Moxon

This month the library turns its attention to the creation and use of menus. The library uses a very flexible method of menu creation that allows both simple and complex menu structures to be set up very easily.

Menus are stored in blocks of memory, which are then passed to a SWI call when they are to be displayed. Setting up a menu block using Basic is a real pain, in the same way that creating a window is a real pain - you have to store all the relevant data in the block by hand. The Wimp library uses a different method that avoids all this tedium.

First a menu block must be dimensioned for each menu to be created (see line 230 in the example program). The menu information is placed into the menu block in two stages. First, the block must be initialised by *PROCinit_menu*, and then each menu item must be put into this block in order, using the *menu_item* procedures. For example, the main menu in the example program is initialised in line 290, and the items are added one by one in lines 310-350. A submenu is then initialised in line 370 and one item added in line 380. Note that in the main menu, the *Submenu* item (line 340) uses the more complicated *PROCmenu_item* procedure to create a submenu that creates a Wimp message *Message_MenuWarning* when accessed.

The advantages of this method of creating menus are twofold: first, a great deal of information can be provided for each item in an easy way; and secondly menu items can have their information changed (e.g. ticks can be toggled). This is done simply by remembering the values passed to the *menu_item* procedure and calling it again with the necessary adjustments - this method is used in the example program to alter a tick in a menu (see *PROCtick* in lines 720-760, and lines 300 and 360 where the relevant values are "remembered").

The example application should be created as in Part 1 of this series. It displays a menu on the icon bar containing a tickable item, a dotted line, a shaded item and a submenu which beeps when accessed, and beeps when the submenu item is chosen.

I should say something about the way the example program decodes the menu items chosen. I prefer to use the SWI call *Wimp_DecodeMenu*, because the results returned are in English - the SWI decodes the number of the choice in a menu, and returns the choice as a string like "Submenu.Beep". This allows CASE statements to be constructed which are easy to understand as in lines 630-680. The two functions *FNfirst* and *FNrest* are provided for use with strings returned by *Wimp_DecodeMenu*. Note that, as *Wimp_DecodeMenu* returns the string with the menu items separated by full stops, menu items with full stops in them will interfere with the operation of *FNfirst* and *FNrest*.

The Wimp library listing should be appended to the listings from all the previous parts, and the complete library used for the example application. More routines next month, and now for this month's routine descriptions.

PART 3: MENUS

Routine 14: PROCinit_menu

This routine should be called to initialise a menu block (previously set up with the Basic DIM command). Note that *width%* and *end%* are variable *names*, not values: the routine *returns* values in these variables to be passed on to Routines 15 or 16.

menu%	Menu block to be initialised
width%	Variable name for returning menu width
end%	Variable name for returning menu end
title$	Menu title

Routine 15: PROCst_menu_item

Adds a standard item to a menu block, i.e. a non-writable text item which can be ticked, shaded, have a dotted line after it and can lead to a submenu. The variables *width%* and *end%* should be those returned by Routine 14 or a previous call to Routine 15 or 16: see the example program for details.

menu%	Menu block to be added to
width%	Variable containing current menu width (variable will be updated)
end%	Variable containing current menu end (variable will be updated)
text$	Menu item text
tick%	Menu item is ticked
dot%	Menu item followed by dotted
line shade%	Menu item is shaded
last%	Menu item is last in menu
link%	Menu item leads to a submenu in block *link%* (or a window with handle *link%*)

Routine 16: PROCmenu_item

Adds a totally user-defined item to a menu block.

First 9 parameters as for Routine 15, except that *text$* can hold the name of a sprite if the menu item os a sprite (as defined in *flag%*).

write%	Menu item is writable
mess%	Menu item leads to submenu which will generate a Wimp message *Message_MenuWarning* when accessed
flag%	Menu flags (see Routine 17)
icon1%	Menu item icon data word 1
icon2%	Menu item icon data word 2
icon3%	Menu item icon data word 3

Routine 17: FNmenu_flags

Returns value of menu flags word.

text%	Menu item is text
sp%	Menu item is a sprite
bor%	Menu item has a border
chor%	Menu item is centred horizontally
anti%	Menu item is in an anti-aliased font
ind%	Menu item is indirected
rjust%	Menu item is right justified
half%	Menu item is displayed at half size (if a sprite)
shade%	Menu item is shaded and cannot be chosen
fcol%	Menu item foreground colour (if anti%=0)
bcol%	Menu item background colour (if anti%=0)
font%	Font handle for anti-aliased text (if anti%=1)

Routine 18: FNst_menu_flags

Returns value of menu flags word for a standard menu text item.

shade%	Menu item is shaded

Routine 19: PROCdisplay_bar_menu

Displays menu on the icon bar. Note that the number of dotted lines in the menu must be passed as they have a different size to normal menu items.

menu%	Block containing menu to be displayed
items%	Number of entries in menu
dots%	Number of dotted lines in menu
x%	X co-ordinate of menu

Routine 20: PROCdisplay_menu

Displays menu anywhere on the screen.

menu%	Block containing menu to be displayed
x%	X co-ordinate of menu
y%	Y co-ordinate of menu

Routine 21: PROCdisplay_submenu

Displays submenu anywhere on the screen. Note that this routine should be used to display a submenu if the Wimp message *Message_MenuWarning* is received, as routine 20 will cause all other menus on display to be removed.

menu%	Submenu to be displayed
x%	X co-ordinate of submenu
y%	Y co-ordinate of submenu

Routine 22: FNfirst

Returns the first element in a menu string (as returned by the SWI call *Wimp_DecodeMenu*).

menu$	Menu string

Routine 23: FNrest

Returns all but the first element in a menu string (as returned by the SWI call *Wimp_DecodeMenu*).

menu$	Menu string

Wimp Library additions

```
 1170 :
 1180 DEF PROCinit_menu(menu%,RETURN wid
th%,RETURN end%,title$)
 1190 width%=LEN(title$)
 1200 $menu%=title$:menu%?12=7
 1210 menu%?13=2:menu%?14=7:menu%?15=0
 1220 menu%!16=(width%+1)*16:menu%!20=44
 1230 menu%!24=0:end%=menu%+28
 1240 ENDPROC
 1250 :
 1260 DEF PROCst_menu_item(menu%,RETURN
width%,RETURN end%,text$,tick%,dot%,shad
e%,last%,link%)
 1270 LOCAL f%
 1280 f%=FNst_menu_flags(shade%)
 1290 PROCmenu_item(menu%,width%,end%,te
xt$,tick%,dot%,shade%,last%,link%,write%
,mess%,f%,0,0,0)
 1300 ENDPROC
 1310 :
 1320 DEF PROCmenu_item(menu%,RETURN wid
th%,RETURN end%,text$,tick%,dot%,shade%,
last%,link%,write%,mess%,flag%,icon1%,ic
on2%,icon3%)
 1330 LOCAL f%,ist%
 1340 f%=tick%+(dot%<<1)+(write%<<2)+(me
ss%<<3)+(last%<<7)
 1350 !end%=f%:end%!4=link%:end%!8=flag%
 1360 ist%=((flag%>>6)AND4)+(flag%AND3)
 1370 CASE ist% OF
 1380  WHEN 1,2,3:$(end%+12)=text$
 1390  WHEN 5,6,7:end%!12=icon1%:end%!16
=icon2%:end%!20=icon3%
 1400 ENDCASE
 1410 end%+=24
 1420 IF LEN(text$)>width% THEN width%=L
EN(text$)
 1430 menu%!16=(width%+1)*16
 1440 ENDPROC
 1450 :
 1460 DEF FNmenu_flags(text%,sp%,bor%,ch
or%,anti%,ind%,rjust%,half%,shade%,fcol%
,bcol%,font%)
 1470 LOCAL flag%
 1480 flag%=text%+(sp%<<1)+(bor%<<2)+(ch
or%<<3)+(1<<5)+(anti%<<6)+(ind%<<8)+(rju
st%<<9)+(half%<<11)+(shade%<<22)
 1490 IF anti%=0 THEN
 1500  flag%+=(fcol%<<24)+(bcol%<<28)
 1510 ELSE
 1520  flag%+=(font%<<24)
 1530 ENDIF
 1540 =flag%
 1550 :
 1560 DEF FNst_menu_flags(shade%)
 1570 =FNmenu_flags(1,0,0,0,0,0,0,0,shad
e%,7,0,0)
 1580 :
 1590 DEF PROCdisplay_bar_menu(menu%,ite
ms%,dots%,x%)
 1600 SYS "Wimp_CreateMenu",,menu%,x%-64
,96+(items%*44)+(dots%*24)
 1610 ENDPROC
 1620 :
 1630 DEF PROCdisplay_menu(menu%,x%,y%)
 1640 SYS "Wimp_CreateMenu",,menu%,x%-64
,y%
 1650 ENDPROC
 1660 :
 1670 DEF PROCdisplay_submenu(menu%,x%,y
%)
 1680 SYS "Wimp_CreateSubMenu",,menu%,x%
,y%
 1690 ENDPROC
 1700 :
 1710 DEF FNfirst(menu$)
 1720 LOCAL ch$
 1730 IF INSTR(menu$,".")=0 THEN ch$=men
u$ ELSE ch$=LEFT$(menu$,INSTR(menu$,".")
-1)
 1740 =ch$
 1750 :
 1760 DEF FNrest(menu$)
 1770 LOCAL ch$
 1780 IF INSTR(menu$,".")=0 THEN ch$=""
ELSE ch$=RIGHT$(menu$,LEN(menu$)-INSTR(m
enu$,"."))
 1790 =ch$
```

!RunImage for example application

```
   10 REM          >!RunImage
   20 REM Program   Wimp Library Part 3
   30 REM Version   A 1.0
   40 REM Author    Mark Moxon
   50 REM RISC User July 1992
   60 REM Program   Subject to Copyright
   70 REM           Not Public Domain
   80 :
   90 LIBRARY "<WimpLib$Dir>.WimpLib"
  100 PROCinit
  110 icon%=FNicon_bar_icon(block%,"!wim
plib",-1)
  120 PROCmenu
```

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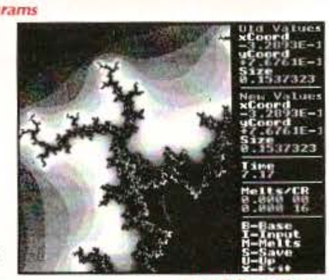

```
Old Values
xCoord
-3.2893E-1
yCoord
+7.6761E-1
Size
0.1537323
New Values
xCoord
-3.2893E-1
yCoord
+7.6761E-1
Size
0.1537323
Time
7.17
Melts/CR
0.000 00
0.000 16
B-Base
I-Input
M-Melts
S-Save
U-Up
X-Exit
```

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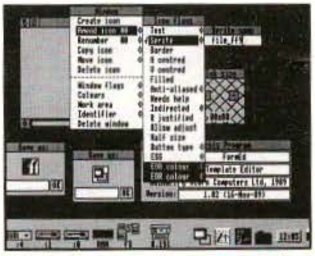

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```
130 mask%=FNpoll_flags(1,1,1,1,0,1,1,1,0,0,1)
140 REPEAT
150  PROCpoll
160 UNTIL quit%
170 SYS "Wimp_CloseDown",task%,&4B534154
180 END
190 :
200 DEF PROCinit
210 ON ERROR IF FNwimperror(block%,ERR,REPORT$+" (internal error code "+STR$(ERL)+")",task_name$,0,1)=2 THEN $block%="TASK":SYS "Wimp_CloseDown",task%,!block%:END
220 quit%=FALSE:tick%=0
230 DIM block% &1000,menu% &1000,menu2% &1000,decode% &100
240 task_name$="WimpLib3"
250 SYS "Wimp_Initialise",200,&4B534154,task_name$ TO ,task%
260 ENDPROC
270 :
280 DEF PROCmenu
290 PROCinit_menu(menu%,width%,end%,"WimpLib")
300 tickend%=end%
310 PROCst_menu_item(menu%,width%,end%,"Tick",tick%,0,0,0,0)
320 PROCst_menu_item(menu%,width%,end%,"Dot",0,1,0,0,0)
330 PROCst_menu_item(menu%,width%,end%,"Shade",0,0,1,0,0)
340 PROCmenu_item(menu%,width%,end%,"Submenu",0,0,0,0,menu2%,0,1,FNst_menu_flags(0),0,0,0)
350 PROCst_menu_item(menu%,width%,end%,"Quit",0,0,0,1,0)
360 tickwidth%=width%
370 PROCinit_menu(menu2%,width%,end%,"Submenu")
380 PROCst_menu_item(menu2%,width%,end%,"Beep",0,0,0,1,0)
390 ENDPROC
400 :
410 DEF PROCpoll
420 SYS "Wimp_Poll",mask%,block% TO reason%
430 CASE reason% OF
440  WHEN 6      : IF block%!8=2 AND block%!12=-2 AND block%!16=icon% THEN PROCshow_menu
450  WHEN 9      : PROCmenu_selection
460  WHEN 17,18 : PROCuser_message
470 ENDCASE
480 ENDPROC
490 :
500 DEF PROCshow_menu
510 menu_x%=!block%
520 menu_chosen%=menu%
530 PROCdisplay_bar_menu(menu%,5,1,menu_x%)
540 ENDPROC
550 :
560 DEF PROCmenu_selection
570 LOCAL adjust%,select1$,select2$
580 SYS "Wimp_DecodeMenu",,menu_chosen%,block%,decode%
590 SYS "Wimp_GetPointerInfo",,block%
600 adjust%=block%!8 AND 1
610 select1$=FNfirst($decode%)
620 select2$=FNrest($decode%)
630 CASE select1$ OF
640  WHEN "Tick"    :PROCtick
650  WHEN "Dot"     :SOUND 1,-15,197,5
660  WHEN "Submenu":IF select2$="Beep" THEN SOUND 1,-15,101,5
670  WHEN "Quit"    :quit%=TRUE
680 ENDCASE
690 IF adjust%=1 THEN PROCdisplay_bar_menu(menu%,5,1,menu_x%)
700 ENDPROC
710 :
720 DEF PROCtick
730 tick%=tick% EOR 1
740 width%=tickwidth%:end%=tickend%
750 PROCst_menu_item(menu%,width%,end%,"Tick",tick%,0,0,0,0)
760 ENDPROC
770 :
780 DEF PROCuser_message
790 CASE block%!16 OF
800  WHEN 0 : quit%=TRUE
810  WHEN &400C0
820   IF block%!20=menu2% THEN
830    SOUND 1,-15,149,5
840    PROCdisplay_submenu(menu2%,block%!24,block%!28)
850   ENDIF
860 ENDCASE
870 ENDPROC
```

Acorn User
...offers much to the user... a good deal of thought has evidently gone into its development...
... a worthwhile upgrade from Edit

Archimedes World
...replete with well thought out and flexible features... very attractive... remarkably inexpensive for what it offers... should prove very popular.

Archive
...a wonderful piece of software... deserves to be on everyone's icon bar... Acorn would do well to provide it free with every machine it sells... so much (is provided) that you wonder how you managed before.
...macros are...a boon and of great value when writing a program... a truly marvellous set of page and printer control options are included... Everything I wanted was there with clear instructions for use. DeskEdit is a must.

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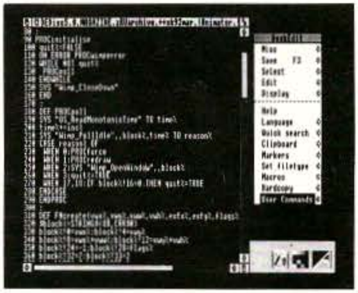

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WP/DTP:

Impression's Hidden Extras

by John Schild

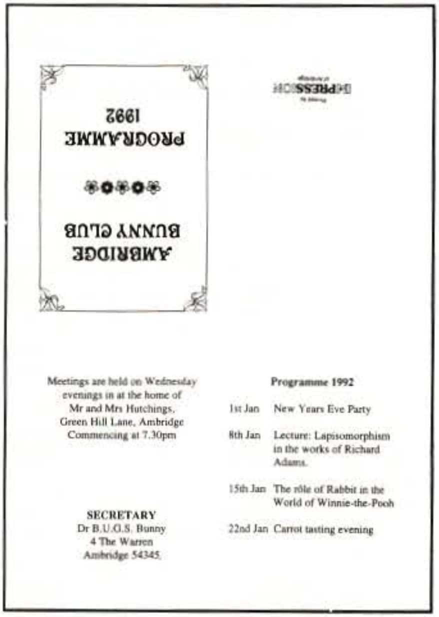
Impression II possesses many powerful features, some of which are too easily overlooked. Among these are the pamphlet printing options, and the possibility of creating new master pages to custom sizes. The routines can be rather difficult to get into, but once conquered yield some great rewards, as I shall demonstrate with a few examples.

PAMPHLET PRINTING

Fundamentally, Impression's pamphlet printing procedures offer time saving short cuts to in-house document production, eliminating the need for cutting and pasting pages together for copying.

Included in the *Print setup* dialogue box, *Pamphlet Two* prints two pages of the Impression document onto a single A4 sheet, sequencing the pages so when a number of sheets, printed both sides, are folded and stapled together, they are presented in the correct order. The following routine generates a simple four sided document, on an A4 sheet folded into an A5 pamphlet.

1. Select any A4 master page - the default page will do nicely, but you can also use master pages 2 & 3 to get wider centre margins (gutters) for binding.
2. Assemble the four page document using normal frame linkage (choose point size and graphics window sizes bearing in mind that the printed document will be reduced to 70% - I generally use 16pt for body text).
3. Save the document.
4. Select the *Print* option.
5. From the *Print* dialogue box select:
   a) All b) Scale=70 c) Sideways
   d) Fit lots e) Setup...
6. In the *Print Setup* box, select:
   a) Ignore page border b) Pamphlet Two
   c) OK
7. Check that *Fit lots* is now followed by *(2)* - i.e. 2 pages per side.
8. Click on *Print.*



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PROGRAMME
1992

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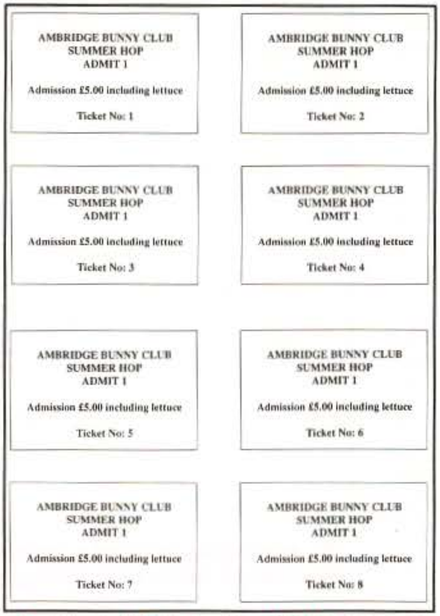
Programme 1992

1st Jan	New Years Eve Party
8th Jan	Lecture: Lapisomorphism in the works of Richard Adams.
15th Jan	The rôle of Rabbit in the World of Winnie-the-Pooh
22nd Jan	Carrot tasting evening

An A6 pamphlet produced by the Pamphlet Four method. Fold twice to obtain pamphlet

The printer will now output pages 1 and 4 in the correct order sideways on a single A4 sheet. After printing these pages Impression will prompt for the paper to be turned over and re-inserted in the feeder tray. It will now print pages 2 and 3, and after folding you have your A5 pamphlet complete. The routine works similarly for an 8 page document, prompting for turn-over after printing two sheets, and so on for 12, 16, 20, 24 pages, etc. in multiples of 4. If your document length falls between multiples of four pages, add the necessary additional pages although these will remain blank, except perhaps for a page number which you might prefer to delete - in which case insert the page number in a repeating frame, rather than on the master page.

Pamphlet Four is a similar option, which prints four Impression pages on one printer page. It employs identical logic to *Pamphlet Two*, leading to the production of A6 pamphlets. In this case, reduction should be to 50%, and print output should be upright (in the *Print Setup* dialogue box). This option is not quite so routine as *Pamphlet Two* but a little experimenting will quickly lead to successful results.



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ADMIT 1
Admission £5.00 including lettuce
Ticket No: 1

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SUMMER HOP
ADMIT 1
Admission £5.00 including lettuce
Ticket No: 2

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A printout of 8 labels using Mini Master pages

An unexpected bonus of Pamphlet Four is that the print output is "head in" to the centre line of the page, so that documents may be produced by folding. I discovered more or less by chance that I could produce a programme card for a local organisation by typing in the four pages of details and printing them out using the *Pamphlet Four* option onto a single side of A4, then folding twice to produce the finished article.

The routine is as follows:

1. Select the default Impression page. Select a point size bearing in mind that the print output will be reduced to 50%. Don't use page numbering; it will be wrong!
2. Put the title page details on page 1.
3. Put the page 4 text on page 2 - if there is none, press Ctrl-G to move on to page 3.
4. Put the page 3 text on page 3.
5. Put the page 2 text on page 4.
6. Save the document.
7. Display the *Print* dialogue box.
8. Select: a) All b) Scale=50 c) Upright d) Fit lots e) Setup...
9. In the *Setup* dialogue select: a) Ignore Page Border b) Pamphlet Four c) OK
10. Return to *Print Dialogue*; check that the figure (4) is now displayed against *Fit Lots*.
11. Click on *Print*.

The printer will now output pages 1 and 4 (with your page 2 text) and the *Print* dialogue will prompt for the page to be turned over. Don't turn it over, but replace it to print again on the same side and your four page document will be output ready for folding.

MINI MASTER PAGES

I suspect that the first problem with Impression's *New Master Page* dialogue box is the difficulty of finding it; and once located it will have frightened off some users because of its size and complexity. Since I dared to start experimenting I have found it of great use for bulk printing of such small items as tickets and sticky labels. The technique is basically to choose master page sizes to be in exact proportion to the default A4 size of the Impression window (210 by 297mm). I offer one illustration as a starting point.

When asked "Can you print 500 numbered tickets?" I cowered from the thought of typing 500 numbers into Impression pages, and then started to investigate whether I could fool the software into doing it for me. I decided on 8 tickets per A4 sheet, so each would be 210mm/2 wide (105mm) and 297mm/4 (74.25mm) high, and then worked out a procedure as follows.

1. Select default Impression page.
2. Press Ctrl-F2 to view master pages. Select master page 1.

3. Click Menu over master page window.
4. Choose *New Master Page* (from within the *Edit* submenu).
5. Type in *Custom width* 105mm; *depth* 74.25mm.
6. Select *Portrait* format, and margins to suit your purpose - perhaps about 10mm.
7. Ignore *Columns*; click on OK. The screen will inform you that you have just created master page 18.
8. Return to default working page. Press Shift-Ctrl-A to bring up the *Alter Chapter 1* dialogue box.
9. Change master page number to 18 and click on OK. A new window, 105 by 74.25mm will now open.
10. Return to master page (by Ctrl-F2 again); scroll to find master page 18.
11. Enlarge scale to a workable size. Type in your ticket details, including styles and Insert Page Number command - (menu route is: menu - misc - insert - current page number - numeric).
12. Return to working page, and you will find your ticket numbered 1 displayed.
13. Via the menu structure click with the Adjust button on *Insert New Page* (in the *Edit* submenu) as many times as you want tickets (500 was rather a lot but the system survived the assualt).
14. Save the document.
15. Display the Print dialogue box.
16. Select *Fit Lots* and if all has gone well, the number *(8)* should appear beside it.
17. Print your tickets, 8 per page, and cut them to size.

Altering the custom size at stage 5 will produce a limitless variety of ticket or label sizes.

Footnote: The examples above were generated using version 2.16 of Impression, coupled to Computer Concepts' LaserDirect. Other printer types might need different page sizes or print reductions.

Editor's note: We tried the above on version 2.14 and found that to get the correct Fit lots *numbers, We had to reduce the Scale factor given by 1%.*

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C Notebook

Hints and Queries

Compiled and Linked by Lee Calcraft

Keith Ross asks how you put text into a Desktop window using C to achieve the same effect as the Syntax checker or Help windows in DeskEdit. The short answer is that there is no simple function (such as *printf()*) which can be used, but we will take a detailed look at the problem in next month's *ANSI C* column.

William Forest writes that he is having trouble using the *bbc_inkey()* function followed immediately by *bbc_get()*. The keypress which the *inkey* responds to is also returned by the *get*. Although he does not say what he is trying to achieve, there are a number of points worth making here.

One solution to the problem might be to issue a *bbc_get()* immediately after the *bbc_inkey()*, discard the result, and then issue another *bbc_get()* to return the next key pressed. Attempting to flush the buffer (one suggested solution) will lose any key sequence that the user had entered.

Another possibility is to issue the *bbc_inkey()* after rather than before the *bbc_get()*. This will enable you to discover what control key is being pressed (if that is your aim).

Note also that you would not normally use *bbc_get()* in a Wimp program, since this would halt all tasks until a key was pressed. Where possible, use the *akbd* functions rather than the *bbc* ones for detecting keypresses in Wimp programs (*akbd_pollsh()*, *akbd_pollctl()* and *akbd_pollkey()*).

Also, note that while you *can* use *bbc_inkey()* with a negative argument (just as with the Basic equivalent), the value returned for TRUE is *minus* one (just as with the Basic equivalent).

USEFUL COMPILER FLAGS

David Pilling

By using some of the Acorn compiler options, you can improve your programs and reduce the number of bugs. These options are accessed by using the command line -f flag.

-ff: Normally when a program is compiled, strings are inserted into the code with the names of functions (for use by the C backtrace). Using the -ff flag suppresses this, and can significantly reduce the size of the final executable.

-fh: This will produce a warning message for any functions which are not defined in an included header file. This means that functions which you do not wish to be global, should be declared as static. It helps to promote modular programming.

-fa: This will produce warning messages if it seems that a variable is being used before being assigned a value. Uninitialised variables are the cause of many problems, and this flag can spot many cases.

CIRCUMVENTING *win_settitle()*

Dave Appleby

Using this *RISC_OSLib* function to change the title of a window results in a *malloc()* claim for a 6.5K block of memory (enough for a window definition containing 200 icons!). This can easily cause an application to run out of memory if it is close to the top of its WimpSlot.

One way around this is to keep a pointer to the buffer used to store the original window template. The new title can then be copied directly into the buffer, and the redraw area found from a call to *wimp_get_windstate()*.

CONDITIONAL EXPRESSIONS IN *printf()*

Lee Calcraft

The ternary operator *?:* can be used in *printf()* and similar functions to conditionally place items in a string to be printed.

For example, the statement:

```
printf("The flag is %s",\
  flag ? "On" : "Off");
```

will print "The flag is On" if the variable *flag* is TRUE, or "The flag is Off" otherwise.

Please send us your C hints - all published hints will be paid for.

Using ANSI C

Part 12: Compiling, Linking and Libraries

by Lee Calcraft

This month I want to take a look at the process of compiling and linking, and at the use of libraries. As starting point, I will use a query sent in by a reader:

When I #include a header file, it appears (by examining the linked code with a disassembler) that ALL the functions declared in the header are linked into the final program, whether or not they are actually used. Is this correct, or am I doing something wrong? If it is correct, it seems to be a gross waste of memory.

To investigate this, let's take a simple program:

```
#include <stdio.h>

int main(void)
{
   printf("Hello, world\n");
   return 1;
}
```

If you compile this into an object file using a command something like:

```
cc -c Test
```

where *Test* is the name of the source code (assumend to be in sub-directory C of the current directory), it will compile to give an object file of some 480 bytes (depending on the version of compiler that you are using). This is nice and small, yet even so, much of this space is devoted to headers and so on (defined by Acorn's Object Format).

If you are going to produce an executable file from this, you could link using:

```
link -o Exe o.Test $.CLib.o.Stubs
```

This will create a file named *Exe* which can be run by typing its name at the command line.

The parameters which we have supplied to *Link* give the names of two object files to be linked into the final executable. The first is the result of compiling our original source, while the second is a special piece of code which supplies links into CLib to provide any of the functions defined in the ANSI standard specification.

If you check, you will find that the final executable is only some 5K in length. This may seem an inefficient way to say Hello to the world, but these are all one-off overheads.

THE EFFECT OF #include

Now what happens if you want to include some RISC_OSLib headers? Suppose you add the following to your program:

```
#include "akbd.h"
```

For this to compile properly, you will need to tell the compiler where to find the header, so you will need to compile using a line similar to the following:

```
cc -c Test -I$.ROL
```

This assumes that the directory *$.ROL* contains RISC_OSLib. If you look at the resulting object code (o.Test), you will find that it is exactly the same length as before. In other words, the act of including a particular header has no effect whatsoever on the final length of the resultant object code (or indeed on the length of the resulting executable).

By #including a header file, you are typically supplying a set of definitions of variables and functions which the compiler can make use of if appropriate (together with any preprocessor directives that the header may also contain).

Suppose now, that your source actually calls a function from RISC_OSLib - say *akbd_pollsh*. To test this out, you could add the following line:

```
akbd_pollsh();
```

immediately after the *printf();* statement in the program. Compile the source as above.

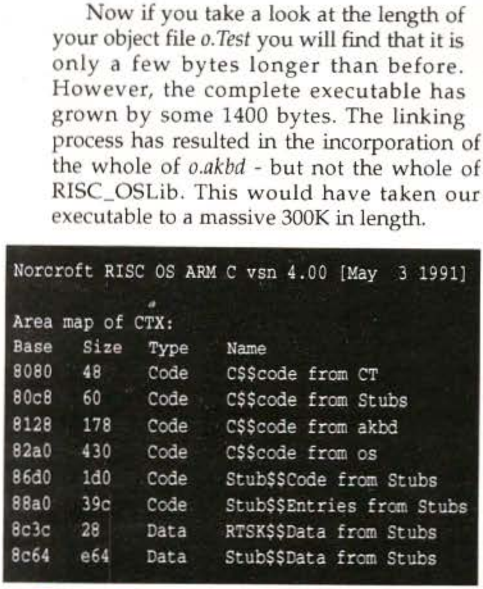
LINKING LIBRARIES

To link it you will need to add o.RISC_OSLib to the names of files to be linked. Thus:

```
link -o Exe o.Test $.CLib.o.Stubs
  $.ROL.o.RISC_OSLib
```

Note that the line break here is artificial - it should all be on one line.

Now if you take a look at the length of your object file *o.Test* you will find that it is only a few bytes longer than before. However, the complete executable has grown by some 1400 bytes. The linking process has resulted in the incorporation of the whole of *o.akbd* - but not the whole of RISC_OSLib. This would have taken our executable to a massive 300K in length.



```
Norcroft RISC OS ARM C vsn 4.00 [May  3 1991]

Area map of CTX:
Base  Size  Type   Name
8080  48    Code   C$$code from CT
80c8  60    Code   C$$code from Stubs
8128  178   Code   C$$code from akbd
82a0  430   Code   C$$code from os
86d0  1d0   Code   Stub$$Code from Stubs
88a0  39c   Code   Stub$$Entries from Stubs
8c3c  28    Data   RTSK$$Data from Stubs
8c64  e64   Data   Stub$$Data from Stubs
```

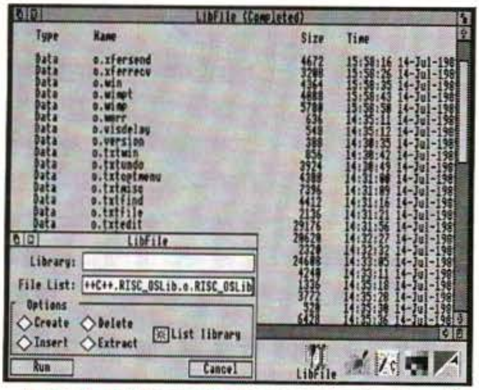
Figure 1. Output from the Linker using the **-map** option

One way to check exactly what is being linked into an executable, is to use the *-map* switch on the linker. Our previous example would then become:

```
link -o Exe o.Test $.CLib.o.Stubs
  $.ROL.o.RISC_OSLib -map
```

This will cause the linker to display a list of the components in the executable, together with their start address and length (see fig. 1).

The reason why only the *akbd* module was incorporated during the linking process in our example is because RISC_OSLib is a special kind of object file called a *Library file.*



File List: ++C++.RISC_OSLib.o.RISC_OSLib

Options: ☒ List library

Figure 2. LibFile can list the contents of a library file

Library files can be created and manipulated using *LibFile*. This is a Desktop application supplied with the DDE (and built using the FrontEnd module). It combines the functions of the two command line utilities *LibFile* and *ObjFile* supplied with the now obsolete Software Developer's Toolbox.

USING LibFile

By using DDE LibFile we can get a listing of the names of all the modules (and their sizes) contained within a particular library. For example, if you drag RISC_OSLib to the LibFile icon on the icon bar, and select the *List Library* options, but keep the other options deselected, you will get a list of the contents of RISC_OSLib (see fig. 2).

If you make use of files of library functions that you have collected over the years, you will find that the most efficient approach is to keep library files relatively small, and try to ensure that they are grouped by topic (as with RISC_OSLib itself). You can then use LibFile to create a single library out of their compiled object files. In this way, when you call a function from your library, only the module containing that function will be linked into your executable. LibFile can also be used to add or remove nominated modules from a library, as a part of the maintenance process - and it all works from the Desktop.

Next month we will take a look at ways of displaying text in a Desktop window. RU

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Icon Bar Clock

(Volume 3 Issue 10)

Under some circumstances the Icon Bar Clock can crash, because its Wimp message block is too small. To fix this, change line 570 to:

```
570 DIM block% 512, menu% 99, b_time% 8,
spr% 10
```

Wimp Function/Procedure Library

(Part 1 - Volume 5 Issue 6)

It is vital to be aware that the window created with Routine 3: FNst_create_window must be redrawn by the user. This is due to the flag setting in line 200 of the WimpLib program. If the window can be automatically updated, then use FNst_create_window2 with the correct window flags.

There is a small mistake in the description of Routine 5; the first 12 parameters are as described in Routine 4, with the ind% parameter from Routines 3 and 4 having been dropped. See line 300 of WimpLib for the complete parameter list.

• BEEBUG OPENING HOURS • BEEBUG OPENING HOURS •

Please note that during the summer months (for the period to 31 August 1992) the Beebug showroom will be open from 9.00am to 6.00pm Monday to Saturday. Note there will be no late Thursday opening - we will be opening late on Thursday evenings again from 1st September. Telesales hours are 9.00am to 6.00pm Monday to Friday and admin and technical support hours are 9.00am to 5.00pm Monday to Friday.

Creating Draw Files from Basic Revisited

by Gordon Gilmore

The library of procedures, *CDraw*, for creating Draw files in Basic programs (RISC User 5:5 and 5:6) contains a couple of matters which need adjustment.

The first is an oversight. Line 1380 adjusts the overall size of the bounding box to take into account a new text object. As written the units are presented in OS units. The correct line given below provides the parameters in internal Draw units.

The second matter is an improvement. Lines 1240 to 1270 estimate the size of the box needed to contain the text. As a correspondent has pointed out, this is only accurate for text in the system font. Outline font characters have varying widths, and this could result in a text object protruding beyond the limits of the overall drawing bounding box. In fact, files created using the original program can be read into Draw, Draw1½ and Ovation without any trouble, but it is more satisfactory to have things correct. As it happens CDraw, Draw and Draw1½ may give slightly different co-ordinates for the bounding box for the same text object due, presumably, to rounding errors.

A more accurate estimate of the size will be given if lines 1240 to 1270 are replaced by the lines given here, and a new procedure *PROC_textspace* is added to the end of the program (this applies to both the complete listing in the magazine and the program supplied on the 5:6 disc). The procedure uses facilities provided in the Font Manager for this very purpose. Note that Font$Path must have been set up somewhere within the system (which is done automatically when !Fonts is 'seen') before calling *PROC_textspace*.

```
 1240 lx%=xorigin%
 1250 by%=yorigin%
 1260 PROC_textspace(text$,font%, ptsize, pthigh, lx%, by%, rx%, ty%)
 1270 :
 1380 PROC_checkspace(lx%<<8,by%<<8,rx%<<8,ty%<<8)
 2990 :
 3000 DEFPROC_textspace(text$, font%, ptsize, pthigh, RETURN lx%, RETURN by%, RETURN rx%,RETURN ty%)
 3010 LOCAL handle%,xscale%,yscale%,r1%,r2%,r3%,r4%
 3020 IF font%>0 THEN
 3030 SYS"Font_FindFont",,CDraw_font$(font%),ptsize*16,pthigh*16 TO handle%
 3040 SYS"Font_SetFont",handle%
 3050 SYS"Font_StringBBox",,text$ TO ,r1%,r2%,r3%,r4%
 3060 SYS"Font_ReadScaleFactor" TO ,xscale%,yscale%
 3070 SYS"Font_LoseFont",handle%
 3080 ty%=FN_textcoord(by%,r4%,yscale%)
 3090 rx%=FN_textcoord(lx%,r3%,xscale%)
 3100 by%=FN_textcoord(by%,r2%,yscale%)
 3110 lx%=FN_textcoord(lx%,r1%,xscale%)
 3120 ELSE
 3130 rx%=lx%+ptsize*2.5*LEN(text$)
 3140 ty%=by%+pthigh*2.5
 3150 ENDIF
 3160 ENDPROC
 3170 :
 3180 DEFFN_textcoord(v%,r%,scale%)=(v%*scale%+r%+scale%/2)/scale%
```

Technical Queries

Alan Wrigley answers your questions about using fonts, Wimp window flags, and the MessageTrans module.

Dear Sir

I have recently taken the plunge and bought a DTP package for my Archimedes, but I find that it takes forever to display the characters on the screen. I thought the Arc was supposed to be a fast machine, but I am discouraged from using it for DTP. Is there some way to overcome this?

Eve Gray

If you are using outline fonts with any application, including a DTP package, there are several steps you can take to increase the speed at which the redrawing of characters on the screen takes place. First and foremost of these is to configure a *font cache* in your machine. This means that a block of memory is set aside for the operating system to hold the character data for the font you are using. It is much faster for the font manager to access this than to read the data from disc, and this greatly increases the redraw speed. When a new font or point size is required, that is also loaded into the cache, but it will replace anything already there if there is insufficient room for both. Clearly, the larger the cache you can configure, the more data can be held, and the less likely you are to suffer from agonising delays as you load or move around a document.

To configure a font cache, press F12 to get to the command line, then type:

```
Configure FontSize nK
```

where n is the size required in kilobytes (remembering to reset the machine afterwards to implement the change). The memory will now be automatically reserved for the cache each time the computer is switched on. On a machine with 2 Mbytes or more, I would suggest a font cache of at least 128K - more if you can spare the memory. On a 1 Mbyte machine you will have to balance the need for a large font cache against the requirements of the applications you are running, and come up with a figure which provides an adequate compromise in your situation. You can alter the size of the font cache temporarily while you work by dragging the slider in the Task Manager's *Tasks* window.

Following on from this, it clearly makes sense not to use too many different fonts or sizes in one document. It is not usually good practice to do so anyway - one of the rules of good DTP is that documents look much better if you stick to just a few fonts.

Dear Sir

The Programmer's Reference Manual states that bit 16 of the window flags at R1+32 after a call to Wimp_GetWindowState *returns whether the window is open or closed. Could you please tell me how to test this bit in order to determine whether to open or close the window.*

Mike Whiteman

The Wimp reserves 5 bits of the Window Flags word for returning information to the task via *Wimp_GetWindowState*. Apart from bit 16, which as you have already mentioned indicates if set that the window is open, the others have the following meanings when set:

17 window is fully visible (i.e. none of it is obscured by another window)
18 window has been toggled to full size
19 the current request to open the window (via poll reason code 2) was made as a result of the user clicking on the Toggle Size icon
20 window has input focus

The simplest way to test a bit (and this is true for *any* bit in *any* byte or word, not just in this situation) is to AND the value with 1 shifted left by the required number of places. So to test bit 16 of the flags word returned by

Wimp_GetWindowState, for instance, and to call one of two procedures depending on the result, you would use something similar to the following:

```
    SYS "Wimp_GetWindowState",,block%
    flags%=block%!32
    IF flags% AND 1<<16 THEN PROCclose EL
SE PROCopen
```

You do not say why you wish to read the flags in this way, but generally speaking you will find it much easier to maintain an internal variable in your program which keeps track of whether a window is open or not, rather than read it from *Wimp_GetWindowState* each time. If, for example, you want to toggle the window open or closed when the user clicks on an icon or selects a menu option, you could have a variable *windowopen%* which is toggled at the same time by using:

```
    windowopen%=windowopen% EOR 1
```

This would have the effect of toggling the variable between 0 and 1. This is very useful in the case of a menu option, since you can then use the variable directly to determine whether the menu item should be ticked when opening the menu. Since the "tick" bit is bit 0 of the menu flags, you can use a line such as:

```
    menublock%!28=windowopen%
```

which would tick the first item in a menu (i.e. the one situated at *menublock%+28*) if *windowopen%* has a value of 1 (if any of the other menu flags are to be set as well, you will have to add in the appropriate value).

If you adopt this method, you must of course remember to toggle *windowopen%* off if you receive a request from the Wimp to close the window.

Dear Sir

Could you please explain the purpose of the MessageTrans module. I can find no reference to it in the PRM.

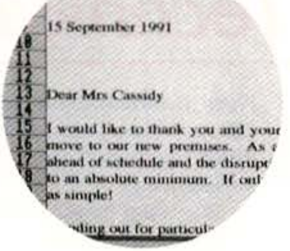
John Connolly

MessageTrans is intended primarily for the use of commercial software developers, and is central to Acorn's efforts to make the Archimedes attractive to the widest possible range of overseas markets. What *MessageTrans* does is to provide the means whereby textual elements within a program, for example menu choices or error messages, can easily be converted to a foreign language without needing to re-code the program itself.

The way this is done is by extracting all such text items from the program and placing them into a separate file called *Messages*, which is then saved inside the application directory. Each text string in the file has an associated token with it consisting of a few identification characters chosen by the programmer (for example, a set of menu items might have the tokens "MEN1", "MEN2" and so on). When the program needs to display a particular item of text, the token is sent to *MessageTrans* via a SWI call provided for the purpose, and the text associated with that token is looked up and displayed. This means that a program can be converted for use in a foreign language by simply translating the contents of the *Messages* file, leaving the program itself untouched.

The main SWI calls provided by the module are *MessageTrans_OpenFile*, *MessageTrans_Lookup* and *MessageTrans_MakeMenus*. We will be looking more closely at how to use these in a future issue of RISC User. Documentation on the SWIs is available for software developers from Acorn.

If you have come across any problems in using or programming your Arc, or you have ever said to yourself "I wonder why..." or "I wonder how...", then do write in to Technical Queries.


15 September 1991

Dear Mrs Cassidy

I would like to thank you and your
move to our new premises. As
ahead of schedule and the disrupt
to an absolute minimum. If onl
as simple!

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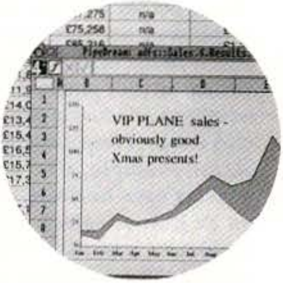

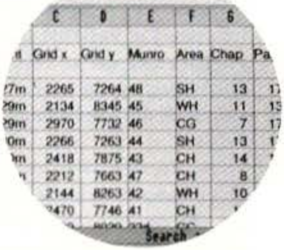

C	D	E	F	G
Grid x	Grid y	Munro	Area	Chap
2265	7264	48	SH	13
2134	8345	45	WH	11
2970	7732	46	CG	7
2266	7263	44	SH	13
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2212	7663	47	CH	8
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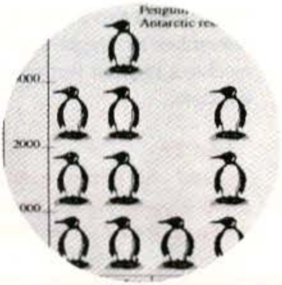

Assembler Workshop

A round-up of assembler hints by Alan Wrigley

CORRUPTED REGISTERS

When making SWI calls from assembler, you should be careful not to assume that register contents are preserved unless the PRM explicitly says so. Many Wimp SWIs require only R1 to be specified on entry, but the call may well corrupt R0, so it is unwise to try to retain data in R0 across a SWI call. For example, you may want to shade a number of icons consecutively, having set up the mask in a register beforehand. The following method will not work correctly because R0 is corrupted by the call to *Wimp_GetIconState*:

```
MOV R0,#&400000
......
SWI "Wimp_GetIconState"
STR R0,[R1,#8]
STR R0,[R1,#12]
SWI "Wimp_SetIconState"
etc.
```

However, if you substitute R0 with R2 in all three places, then the call will behave as you expect.

MULTIPLICATION

It is not always necessary to use the MUL instruction to multiply two values. An obvious example is multiplying by a power of two by simply shifting a register to the left. But there are other cases where one instruction will do the job. For example, to multiply register Rx by 2^n+1 (i.e. 3,5,9,17 etc.), just use:

```
ADD Rx,Rx,Rx,ASL#n
```

and to multiply by 2^n-1 (i.e. 3,7,15 etc.):

```
RSB Rx,Rx,Rx,ASL#n
```

This will normally use fewer instructions than MUL (since you would usually require an additional instruction to load the multiplier into a register), and will execute faster. The multiplier values obtained by this method can be doubled up by adding one further instruction - just shift the register left by one bit first. So to multiply by 14:

```
MOV Rx,Rx,ASL#1
RSB Rx,Rx,Rx,ASL#3
```

ERROR HANDLING

It is particularly important to pay attention to error handling when writing assembler programs. If something goes wrong, you cannot retreat to the safe haven of the Basic environment to examine variables. It is always wise to use the X form of SWIs when developing programs, and have a general purpose error routine which is called if an error is returned by a SWI call. However, this does not always help with debugging - for example, if the error returned is "Illegal window handle", which of the dozens of SWI calls is the culprit?

The following routine will aid in debugging. If you automatically use the X form of all SWI calls, and follow the call with an error trap, the routine will first of all report the error, then tell you where in the program it occurred and the name of the SWI concerned. So your main program would make SWI calls in the following fashion:

```
SWI "XWimp_OpenWindow"
SUBVS R3,PC,#12
BLVS error
```

The routine itself is as follows (it assumes the name of your application is stored at a location labelled *appname*:

```
.error
STMFD R13!,{R0-R2,R14}
MOV R1,#1:ADR R2,appname
SWI "Wimp_ReportError"
LDR R0,[R3]:BIC R0,R0,#&FF000000
ADR R1,errbuffer+28
MOV R2,#32:SWI "OS_SWINumberToString"
MOV R0,R3:ADR R1,errbuffer+12
MOV R2,#12:SWI "OS_ConvertHex8"
MOV R0,#32:STRB R0,[R1]:ADR R0,errbuffer
MOV R1,#1:ADR R2,appname
SWI "Wimp_ReportError"
LDMFD R13!,{R0-R2,PC}^

.errbuffer
EQUD 255:EQUS "Address "
EQUD 0:EQUD 0:EQUD &20202020
EQUS "SWI ":EQUD 0:EQUD 0:EQUD 0
EQUD 0:EQUD 0:EQUD 0:EQUD 0:EQUD 0
```

First the program counter at the point of the error is read, then the SWI name contained in the instruction is decoded. The flags are preserved on exit from the subroutine, so you can follow the call with *BVS poll_loop* or whatever. You can of course substitute any other register for R3 to hold the program counter contents on entry.

Write-Back... Write-Back...

Compiled by Mike Williams

We have been very pleased with the response to our new **Write-Back** feature, which this month has been expanded to three pages. We are particularly keen to see more use being made of the Pin-Board where readers can seek and receive information on their computing problems.

Book Review - Update

Bruce Goatly, author of *Desktop Publishing on the Archimedes*, which we reviewed in RISC User 5:6, has asked us to point out that the book is priced at £12.95 (not £14.95 as we stated) making it even better value for money.

Re-Inking Ribbons

My advice is to avoid this practice. The fabric of the ribbon takes a lot of hammering by the pins in the print head, and after a few times round it's had enough and starts to disintegrate. Manufacturers will never overbuild. In other words, there is no point in the manufacturer supplying a ribbon which is of such good quality that it will far out-live the ink which is impregnated on it. In any case the cost of genuine factory replacements is only a fraction of what it was a few years ago. I'm not sure that it's worth fiddling with re-inkers to save a few coppers against the risk of gumming up your print head with fluff and threads from a ribbon that's all but threadbare.

The best way to save money with printer ribbons is to twist them. Most printers like my Canon 1080 and Star LC-10 don't use the centre of the ribbon, but print near to one edge. If you twist the ribbon and wind the twist into the cartridge, the twist will come out the other side with the ribbon upside down. If your printer uses the centre of the ribbon, my advice is throw it away when the print starts to get faint.

Geoff Preston

On the other hand:

I have been re-inking ribbons since 1988 and have never suffered any problems as a result, except that the actual ribbon eventually wears out.

Buy stamp pad ink in a small plastic bottle with a screw top; with a sharp knife, make two vertical slits on opposite sides of the bottle to such a depth that the bottom of each slit is about the width of the ribbon below the shoulder of the bottle; with the ribbon still in the cartridge, insert a section of ribbon into the slits and replace the screw cap tightly.

It is now possible to draw the ribbon evenly through the ink. To do this, invert the bottle; pull a section of ribbon out of the cartridge; slowly draw the inverted bottle along a withdrawn section of ribbon; wind the inked section back into the cartridge and repeat until all the ribbon is inked.

Once the ribbon is inked, it is necessary to remove it from the cartridge and dry it, by suspending it from a washing line. Most cartridges easily come apart to allow ribbons to be removed, but note the position of the springs or other small parts. The ribbon will take several hours, or even a couple of days to dry. Once completely dry, the ribbon can be threaded round the mechanism of the cartridge, which is then closed, and the ribbon wound back into the cartridge with the knob.

Ribbons re-inked in this way will last longer and give better quality printing than new ribbons. I have successfully re-inked several ribbons, and from experience would expect to re-use an average ribbon about four or five times.

John Heaton

Well there you have two quite opposing views. If you do choose to follow Mr.Heaton's advice, then it is entirely at your own risk. We also had a phone call from reader R.S.Molton who recommended the ubiquitous WD40.

Is C Faster than Basic

The original note by P.S.Williams (*C Notebook*, RISC

User 5:4), and the letter by John Banks in *Write-Back*, RISC User 5:6 has provoked considerable correspondence. A selection of the points raised are given in the following extracts:

I would like to know more about the conditions under which P.S.Williams ran his programs. In RISC User 5:1 Lee Calcraft reported that benchmark timings were dependent upon screen mode used. What mode was used for the table on page 53?

Other things also affect timings and should have been stated, for example, the O.S., type of chip used, version numbers of interpreter or compiler used. It seems unlikely that the quoted results used the FPEmulator.

I have used RISC OS 2, a standard A540, Basic V, RiscBasic compiler v1.04, Fortran77 release 2 to get the results in table 1 using the SpeedTest program from the disc, and my Fortran version.

	Basic V		*RiscBasic*		*Fortran77*	
Mode	0	99	0	99	0	99
int. add	13	20	0	2	2	3
int. mult.	13	22	1	2	3	3
int. div.	16	28	22	54	3	5
real add	16	31	25	70	21	53
real mult.	18	32	32	80	26	54
real div.	22	37	36	81	30	60

Table 1 Benchmark timings in centiseconds

Note that 'real' means 32 bit precision for RiscBasic and Fortran77 (which use FPEmulator), and 40 bits for Basic V. These results show Basic V to be the fastest at floating point operations.

Kate Crennell

The author of the original note, Mr.P.S.Williams, writes:

I seem to have touched a raw nerve of your anti-C correspondent. I am really not trying to start one of those silly language controversies. However, I must point out that C has extensible data structuring facilities which Basic does not, control structures equal to those of Basic, a 'case' operator which makes it weakly typed, the use of external C files for portability, and a choice of 32 bit and 64 bit types (Basic has 32 and 40 bits).

I think that it is possible to write illegible and badly structured programs in almost any language; the reverse is also true. In the final analysis we need different languages for different tasks. I need to have speed in some of my applications without the detail involved in writing machine code. There is no choice but to use a compiled language.

P.S.Williams

Paul Field echoes the comments of many readers:

C has a major advantage over Basic for Wimp programming on the Archimedes in the form of Acorn's libraries. A lot of complexity of programming the Desktop is dealt with by libraries, for example dialogue boxes, dynamic memory handling, and Draw file processing. The nature of C makes it highly modular

Mr.Banks also states that C has the disadvantage of 'strong typing'. In fact C actually has 'free typing' which means that operations determine the type of their parameters, whereas 'strong typing' (used by Pascal, Ada and Algol68) means that any access path (i.e. name, function call, index to array) determines at compile time, the type of value accessed through it, and only operations of this type are allowed.

Paul Field

Many other readers have written in similar vein. There does seem to be good agreement on the fact that using the Acorn C libraries does make programming the Wimp easier than in Basic, but that C programs can be less readable. As Mr.Williams says in his letter, there is no one best language. All depends on the nature of the task in hand and the skill (or otherwise) of the programmer.

Pin Board

Object Oriented Programming

I am writing to express my surprise that there are, to my knowledge, no object oriented languages whatsoever (e.g. Object-Pascal or C++) available for RISC OS.

I understand that C++ was originally implemented in the form of a C code generator called C_front. This compiled C++ into syntactically correct but very unreadable C code which could be compiled through your normal C compiler. This allows the same front end to be used on different systems.

I would be very interested in knowing when we might be seeing object oriented languages for the Archimedes.

A.Phillipson

The Basic-C controversy is, in my opinion, a red herring. What is much more important is that Archimedes users are severely deprived when it comes to object oriented languages. If anyone is interested in discussing a compiler for an object-oriented language (preferably Ada), I would like to hear from them.

Nick Mellor, 17 Carberry Road, Leeds LS6 1QQ
(address included at his request).

More on Canon BJ Printers

I have had awful trouble trying to marry a BJ10ex with Mail Merge from 1st Word Plus (FWP). The FWP LQ printer driver with BJ in LQ mode won't print labels three across the page, and trying to print a second page of even single labels is hopeless.

However, if you use the standard FWP printer driver with BJ in LQ mode you can print the labels OK, but you lose any highlighting, and the second page is still a no-no.

If you replace the BJ with an Acorn BJ150 all features work like a dream.

Barry Tattersall

And Problems with Proportional Spacing

Largely as a mental exercise I finally succeeded in making my letter-writing program produce justified proportionally spaced text - or so I thought until I put it to serious use. After a fruitless search for my error I found that my Star LC-10 printer has a different proportional spacing for NLQ than for draft text.

This implies that hard copy in draft mode may not always be a reliable guide to subsequent NLQ printing of the same page. Are all printers like this? It would be helpful to have a chart for buyers and programmers alike of all the features offered by the more popular printers. For example, my Star has the facility to expand character spacing providing a neat means of justification, whereas I do not think my previous Epson FX-80 had this feature.

P.W.Mathieson

APL for the Arc

For many years now, a team of altruists has been producing, refining and promoting a low cost APL system. To my shame I must admit I've never tried it myself. In addition to the software they have produced a regular A5 journal to help users. Yes, this is APL as in the major IBM language. Specific versions are available for the Archimedes (the most expensive is just £11). All enquiries should be made to Anthony Comacho, I-APL, 11 Auburn Road, Redland, Bristol BS6 6LS.

Tom Boyd

PC Emulator/MS-DOS in RISC User

We intend to run a regular PC column in RISC User covering the PC Emulator and MS-DOS. To this end we would like to hear from anyone who feels they have the experience, expertise and ideas to contribute regularly on this subject. We would also like to hear from users of the PC Emulator on what they would like such a column to cover.

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DEMOS

PD12 Disc 5 sound + graphics demos from Hugo Fiennes of the Serial Port.

PD21 Disc 3 demos, Balls, Balls2 and BIA-Tetris (the latter is also a game).

PD22 Disc 3 demos, Noah, Chips and Demo1.

PD23 Disc 4 demos, Bounce, Crimbo, ColDemo and Rotate.

PD24 Disc 3 demos, Demo, Gopher and Overscan.

PD25 Disc 4 demos, Deskballs, DudsDemo, EgIntro, and Z-Brother.

PD26 Disc 4 demos, Sister, SkullDemo and Wibble.

PD27 Disc 2 demos, GrannyChow and Windows

PD36 Disc 3 demos, Leapin' Fish, SinDemo and Swallow.

PD37 Disc A massive four-part demo called 'No RISC No Fun'. This has to be the best demo yet for the Arc. Amazing!

PD42 Disc 4 demos, AceDemo4, Cubitus, Scorpius and 3D_RayPic.

GRAPHICS

PD13 Disc !Projector application - displays films created with the Ace Computing Mogul package. Six example films are included.

PD18 Disc displays several still and animated ray traced pictures.

PD33 Disc displays several still and animated ray traced pictures.

PD44 Disc A selection of fractal generation programs and utilitses.

PD45 Disc 2 applications, Creator and Translator, allowing exchange and display of graphics picture files between Archimedes and other computers. Also some high quality demo pictures plus a mode converter and a mode utility.

DRAWING AND ART

PD15 Disc Arctist+ and BigM, both 256 colour art packages, along with Design, a symmetrical pattern designer.

PD41 Disc 4 applications: 'Display' for displaing of Draw files by dragging them into a window. 'Drawplus' is an object oriented drawing package that may be used as an alternative to Acorn's Draw, with many enhancements over Draw. 'Drawstrip' enables the easy creation of function keystrips using Draw. 'Drop' enables Draw files to be rotated in 3D and then saved again in their new perspective.

EDUCATION

PD14 Disc !REG, a student register system which replaces classroom registers. A system for managing the recording and reporting required by the National Curriculum and data files for Pipedream for NC statements of attainment in science.

MUSIC

PD01 Disc Soundtracker playroutine plus the following tunes: Aces-Hi, Acidbat2, Afl, Alf, ArtNoise, AxelF, Backpopped, Big, Blitzwing, Blizzard02.

PD02 Disc Soundtracker playroutine plus the following tunes: BatMix, Bobby, Brill, Burning, Chartmix, Chipgene, Demo2.

PD03 Disc Soundtracker playroutine plus the following tunes: Confusion, Crack, Criminal, Dear, Demons, Dns, Elephant.

PD04 Disc Soundtracker playroutine plus the following tunes: Doc1, Funky, Ducksong, Electric_2, EndTheme, Enutomed, Equinoxe5, FinalTFDMI, FinalVis.

PD05 Disc Soundtracker playroutine plus the following tunes: Fyc, GoodTune, Hello, HowDeepIs, Huba, Humanoid, Hunters, Hymn, Idea, Igarun, IntoB.

PD06 Disc Soundtracker playroutine plus these tunes: Jazzid, Jmj_China, LastNinja2, Like, Magnetic4, MegaForce0, Minimize, Mod, New_Biz.

PD07 Disc Soundtracker playroutine plus these tunes: MyWay, Nothing-2, Oooerr, Outrun, Pacman, Pat, PetShop, Pretend, SaySaySay2, Steeve.

PD16 Disc 230 tunes for loading into the music package Maestro, variety enough to suit most tastes.

PD08 Disc Soundtracker playroutine plus these tunes: Setrox, Tarzan, TGM, TheModel2, TjatMikes, Toccata, Unit, Vprtex, We're, Yezz.

PD09 Disc Soundtracker playroutine plus these tunes: Acid_House, Bananas, Cambod, Crok, Cute, Dallas, Deadlock, Dragnet, Yazoo.

PD10 Disc Soundtracker playroutine plus the following tunes: DemoSmash, FFSound, Five, GSCTheme, HiEnergy, Oxygene2, Piano, PopCorn, PumpUp.

PD11 Disc Soundtracker playroutine plus the following tunes: Rescue, Rockit, Round,Scratch, Scratch2, Show, SmokeOn.

PD40 Disc The Jukebox playroutine plus Tracker tunes: Acid House, Six2, TeddyBears, Canon, Breathe, Rag It.

PD43 Disc An application Coconiser, very similar to Tracker, that allows the creation of tunes by sequencing digitally sampled sounds. Demo tunes.

PD46 Disc The Jukebox playroutine plus the following Tracker tunes: Beginning, Blue Peter, Frog Song, IceIceBaby, Monty Mix, Over The Bow, Rawhide, SkyXmasMix, Thunderbird

PD47 Disc A selection of SoundTracker and Tracker playback routines and utilities including a keyboard and spectrum analyser.

TRICKS AND NOVELTIES

PD17 Disc A collection of 27 amusing novelty programs. Some produce the weirdest effects!

PD32 Disc An application Cookie - puts up a window containing a 'fortune cookie' or a well-known saying or piece of philosophy. Be warned! Very addictive once seen, also rather zany. There are some 6000 sayings. Also a scroll text demo with soundtrack music called Invade which also features a space invaders game within it.

UTILITIES AND APPLICATIONS

PD28 Disc 20 utilities of various types: 1stFile, ASm2, CloseUp, Crypt, Dir, Display, Drawlink, Dustbin, Filetypes, FileUtils, Find, Keys, Loadprogs, MultiPrint, NewBar, NewCodes, PD_Impress, PrinterTx, ProgCalc, and Set_Type.

PD31 Disc 17 utilities/applications: Address Book, Address Labeller, DiscSpace Display. Desktop Calendar, Cassette Inlay Printer (Two of these!), DFS Disc Reader, Automatic Application Creator, ROM Speed-Up, Arc to Psion Transfer, System Utilities, STD Codefinder, Trash Can, Front end for Twin, Front end for View, Volume Controller, Control of Pointer by keys.

PD38 Disc 15 utilities/applications: a 1st Word Plus file converter, a 1st Word Plus printer driver for Star LC200, a text outliner application, a hypertext program (like Genesis), a CD database, a video tape database, CMOS RAM saver and loader, disc sector editor, file save reminder, fast formatter, font printer, a COPY options setter, TEXT to DTPfile converters, plus a print spooler.

CLIPART AND PICTURES

PD29 Disc Over 4 megabytes of Sprite pictures which can be used as clip art. The files are in a compressed form and the decompression utility is included.

PD30 Disc Over 2 megabytes of Sprite clip art and Draw filess. The files are in a compressed form and a decompression program is included.

FONTS

PD35 Disc Eleven PD outline fonts for use in RISC OS applications: Stencil, American Typewriter, Bodoni, Revue, Brushscript, Cooper Black, Fritz Quad, Garamond, Hull, London and Optima.

COMMS

PD34 Disc Arcterm3, a full comms software package. Arc100, a scrolling text terminal. Grapevine, another scrolling text terminal but multi-tasking. TaskData, a multi-tasking viewdata comms package. Download, an application for transferring files between machines via serial port. Timer, a utility for recording on-line time and call cost. The latest version of Sparkplug, the file decompression program. A complete set of programs for running a bulletin board system on your Archimedes.

GAMES

PD19 Disc 10 games: Adevnture, Battle, Battleships, Connect4, Darts, Fish (Pelmanism), Fruit Machine, Golf, Hangman and Impact.

PD20 Disc 12 games: Invaders, Line Of Five, Othello, Pelmanism, Rocks, Rubik Cube, Simon, Solitaire, Star Trek, Tetris, Tile Trial and Yahtzee.

PD39 Disc 6 games: Pac Man (in a window!), Arc Patience, Breakout (inside an icon!!!), Creepie (Centipede), Pelmanism and International Golf (Brilliant!)

SAMPLER DISC (PDS1)

Contains the following sample programs from our Public Domain Software Library:
SoundTracker, Accounts, SC Label, Follow, Hangman, Multiprint, Rotate, STD and Wanda

Public Domain Special Collection

The selected PD software listed below was fully described in Simon Burrows' article on the PD scene in RISC User 5:7 (June 1992).

PDX1	**Draw Plus**	Extended Draw
	Label	Label printing
PDX2	**Address D**	Address labels
	AGP	Advanced graph plotter
	Daily	Screen clock
	Draw Cross	Crossword generator
	Memphis	RAM filing system
	Translatr	Graphics image converter
PDX3	**ArcFS**	Decompression utility
	Risc BBS	Bulletin board system
	Impulse II	Inter-task communication
PDX4	**ArcFS**	Decompression utility
	PVray	Ray tracing
PDX5	**Hangman**	Classic game
	Interface	Classy Wimp display
	Menus	Wimp Menu editor

These discs are still available at the standard price of **£1.60** (inc. VAT and p&p).

Public Domain Special Collection

Hints & Tips. . . Hints & Tips

Please keep sending in your hints on anything relevant to the Archimedes, A3000 and A5000. Don't forget, we pay for all hints we publish.

DATA CORRUPTION ON THE A5000

Sean O'Conaill

RISC OS 3.00 has a potentially disastrous bug which can cause machines to lock up when saving files, or can corrupt files during a save. The A5000 release notes say that there is a slight chance that data may become corrupted when using ADFS buffers, but in my experience there is much more than a slight chance. It is recommended that you set ADFS buffers to zero by typing:

```
*Configure ADFSBuffers 0
```

This will reduce the performance of the ADFS slightly, but it does ensure safety. The RISC User GiantFile application crashes when trying to read very large files back to hard disc on the A5000, but typing the above cures the problem. According to 4Mation, the bug also causes a problem with Poster. Note that these errors only occur when the hard disc is accessed: RAM discs and floppy discs are not affected.

To find out which version of RISC OS 3 you are using, look in the Info box from the Task Manager's menu (the Acorn icon on the far right of the icon bar).

AUTOMATIC WIMPMODE SELECTION

Toby Williams

After reading Alan Wrigley's reply to my technical query on setting the Wimp mode to a non-native mode, I decided to amend the *RunMode* program so that the configured mode calculation is done automatically at start-up. This means that whatever mode is configured, the computer can be arranged to start up in that mode, even if it is not native to the computer. The following Basic program will create a transient utility called *RunMode*, which, when double-clicked, will set the mode to that configured for Wimp mode when run by *RunMode. This could be stored in your library directory, or within a boot application directory.

```
DIM code% 128
P%=0:O%=code%
[OPT 7:MOV R0,#161:MOV R1,#196
SWI "OS_Byte":MOV R0,R2,LSR#4
MOV R0,R0,LSL#5:ADD R0,R0,#12
MOV R3,R2,LSR#2:MOV R3,R3,LSL#2
SUB R0,R0,R3:AND R3,R3,#2
ADD R0,R0,R2:SWI "XWimp_SetMode"
MOVVS PC,R14:MVN R0,#0
SWI "XWimp_CommandWindow"
MOV PC,R14:]
SYS "OS_File",10,"RunMode",&FFC,,code%,O%
```

INVERTING IN DRAW

Jeremy Prime

Scaling an object in Draw is easily done via the *Select* submenu. What is not often realised is that if the X-scale or Y-scale factors are negative, then the object will be flipped over. Thus to flip an object about the vertical, scale it with an X-scale of -1, and to flip around the horizontal, use a Y-scale of -1.

ACCESSING HIDDEN BASIC PROGRAMS

Richard Hallas

Some applications written in Basic, including various Acorn applications such as Alarm, have their *!RunImage* files saved with an Absolute file type (the one with the *App* icon). These files cannot usually be loaded into Basic like normal programs. They can, however, be accessed as follows:

- Go to the command line (by pressing F12) and enter

  ```
  Run <path>.!App
  ```

  where *<path>.!App* is the full pathname of the application. You will return to the Desktop with the application installed on the icon bar.
- Now choose Quit from the application's menu, and you will find yourself back at the star prompt.
- Enter Basic (by typing BASIC).
- Enter OLD; you will now find the program is in memory, and you can list it out or save it for future reference.

THE CASE OF THE NUMERICAL ARGUMENTS

Robin Warner

While looking through the User Guide recently, it was a revelation to me that Operating System commands (star commands) which take numerical parameters can take arguments in other bases by using the underline character. For example, if you want to supply a number in base 2, you prefix the number with 2_ as in the following:

```
*Configure RAMFSSize 2_100000000K
```

which will configure the RAM disc size to 256K.

The first digit "2" denotes the base, and of course if the base is greater than 10, letters can be used in the number. Thus an easy way to convert from binary to denary (base 2 to base 10) is to type the following (for example) at the command line prompt:

```
*Eval 2_10101
```

This will print the binary number 10101 in decimal (which is 21). An Alternative method is to go into Basic and type:

```
PRINT %10101
```

ADJUSTING YOUR CLUTTERED DESKTOP

Graham Kendall

Although most people have heard that you can open and close windows with the Adjust button, it is one of those pieces of information that goes in one ear and out the other. However, if you get into the habit of using the Adjust button, you will find your Desktop becomes a much tidier place. Normally when you double-click on a directory with Select, a new window opens and the window containing the directory stays on screen. However, if you double-click with Adjust the original window will close as the new one opens. To go back up the directory structure, click Adjust on the Filer window's Close icon. The same applies when loading applications, and in fact double-clicking on anything in a Filer window with Adjust makes that window disappear. If you consistently use this method of opening and closing windows, you will find your Desktop no longer resembles a battlefield.

PRINTER DRIVER RESOLUTIONS 1

Ivor Clarke

After reading the article about improving the printing of half-tone images on a dot matrix printer, I have been experimenting with the 64 block grey scale test pattern described in the article. I found that on my Panasonic KX-P1123 24-pin printer with the printer driver set to LQ850 compatible very high resolution (360 x 360 dpi), the last two thirds of the grey scale clogged up into one black mass. On the next setting, high resolution (360 x 180 dpi), the black mass was not quite so bad and more tones were visible. However the setting that showed the largest number of distinct tones was medium resolution (180 x 180 dpi), and the resolution still looks quite sharp. The low resolution setting (60 x 60 dpi) is too coarse for good results, but can be useful as a draft print. So it may sometimes be easier to lower the resolution on your printer driver to get a decent half-tone printout, rather than resetting the palette, but of course resetting the palette can, with patience, give better results. Don't forget that the printer driver's Monochrome graphics option must be *off* for printing out half-tones.

PRINTER DRIVER RESOLUTIONS 2

Ian Tidd

A hint was published in RISC User 4:3 (Jan/Feb 1991) which suggested removing printer definitions you don't need from the *PrData* file to speed up the loading time of the driver application. I have found that it is handy to keep just two resolutions for my printer in the *PrData* file, one with a high resolution for quality printing, and one with a low resolution for draft printing. Clicking Select on the printer names in the driver's dialogue box will then toggle between these two print qualities.

DRAW FILES AND FONTS IN DRAWPLUS

Ben Avison

There are many applications which can save Draw files. What is not commonly known is that each application which creates a Draw file leaves its name in the file: if you have a Draw file and you need to know which application created it, simply drag the file into a text editor (like Edit). The name of the application can be found a short way into the top line. The RISC User *FirstFew* application from Volume 5 Issue 7 will show you the name easily. Draw describes itself as ArcDraw (its original name), and Jonathan Marten's two programs Draw1½ and DrawPlus describe themselves as Draw2 and Draw1½ respectively (confusing, isn't it!). Other applications, such as FontFX, Poster and ChartWell give their real names.

On the subject of Draw, Jonathan Marten's drawing applications always record in a Draw file all of the fonts available when the file was created, not just those actually used in the file, which can cause problems if a file is produced on a machine containing lots of fonts. If such a file is loaded on a machine with fewer fonts, the system complains that it cannot find each font, producing as many error boxes as there are missing fonts. This can be avoided by loading the file into Draw and re-saving it: Draw automatically filters out any unused fonts. Be warned, though, that many special features present in DrawPlus and Draw1½ will also be filtered out. RU

Personal Ads

- A3000 1Mb to 4Mb RAM upgrade board £85. Tel. (0782) 314053 after 7.30pm.

- A310, 4Mb RAM, 20Mb hard disc, ARM3, CC ROM/RAM board, 4 slot backplane, Taxan 795 + VIDC Enhancer, Qume Laser Direct + Toner kit, Watford MkII hand scanner, Impression II, Equasor & Business supplement, Poster, Font FX, loads of fonts and other software, full set of Acorn manuals etc. Plus Z88 inc 128 RAM card £1800. Tel. (0322) 662642.

- Orrery from Spacetech (latest version 1.4) mint condition in original case, master unused £55. Tel. (0532) 653643.

- Archimedes A410/1 colour 43Mb hard disc, 4Mb RAM, 5.25" external disc drive, Panasonic KX printer, 1st Word Plus, PC Emulator, PC Lotus 123 software, lots of other business and games software, Archimedes Programmer's Reference Manual, all at £1000. Tel. 081-801 0699.

- Canon BJ10ex printer with automatic sheet feeder £200, automatic sheet feeder for Star LC24-10 printer £20, BEEBUG floppy disc drive interface for A3000 £20. Tel. 081-882 3552 eves.

- A310 with colour monitor, 4 slot backplane, manuals and plenty of software £550, Acorn JP150 Ink Jet printer (new) £225, Armadillo A448 Sampler card and s/w £70. Tel. 071-703 5675.

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- Computer Concepts ROM/RAM podule with 192k of battery backed RAM and spellmaster ROM, ideal for !BOOTing and Archimedes without a hard drive only £50. Write to; Mr M. Brooke, Lemgo Primary School, BFPO41.

- BBC A3000 2Mb with Acorn monitor and Pres plinth, First Word Plus, Acorn DTP, Lemmings, Pacmania, Break 147, ArcOmnibus, various Public Domain Demos, games etc. All original manuals etc. £700 o.n.o. Tel. 081-654 3733.

- Archimedes A420 ARM-3, 4Mb RAM, 40Mb hard drive, Watford VIDC Enhancer, no monitor £1100, will throw in some free software (PD and registered commercial). Tel. (0256) 54103 (answerphone during day) or Fax. (0256) 50575.

- Canon BJ10ex with printer driver £200 o.n.o. Acorn ROM podule with optional RAM chips fitted £40. WANTED: Ground Control Teletext adaptor. Tel. 051-606 0289.

- Archimedes 310, colour monitor, 4 slot backplane, 20Mb ST506 internal drive, external disc buffer, Oak SCSI interface, RX80 printer plus 50 discs of software £800, 20Mb ST506 drive £60, 2 slot backplane £15 (unused). Games; Nevryon, Dropship and Powerband £12 each, Missile control and jet fighter £6 each. Tel. (0775) 710640 eves or (0775) 761161 extn 4361 day.

- Acorn colour monitor £135, 20Mb ST506 drive for A410/1 £80, Logistix £15, ArcComm 1 £10, Z88 Computer, 32k RAM pack, two PSUs, PClink ROM, Archimedes lead and file transfer software, Z88 Eprom magazines £145, all in excellent condition. Tel. (0424) 717702.

- Wordwise A Plus, disc and manuals £16, Microdrive World Edition - 2 discs, manual £18, Herewith the Clues! 2 discs etc. £10, Zarch Acornsoft £6, Speech! Superior Software £10, Microdrive £8, Spell! age 5 to 15 £5, !Help companion disc and book £5, BBC Viewsheet ROM, manuals £8.50. Tel. (0726) 814488.

- Archimedes 310 system for sale, have upgraded to A5000, software also available £500 o.n.o. Tel. (04617) 398.

- Games in original cases and in excellent condition; Nevryon £9, E-Type Designer £9, Lemmings £14 (brand new) and also a number of games for the BBC/Electron. Tel. (0624) 833158 or 832434.

- Top Banana (HEX) £15, Hostages £10, Dread Dragon Droom £20 (in box), all originals. WANTED: Chocks Away Missions disc, Delta Cat joystick. Tel. 357 5 331961. Address; P.O.B. 1830 Limassol, Cyprus.

- Jetpage Postscript Cartridge for Hewlett Packard LaserJet II/III, 35 postscript fonts, compatible with Acorn Postscript Driver £90, BBC Advanced User Guide £10, Archimedes ISO-Pascal Rel.2 with TWIN editor £45, PC Emulator V1.6 with MSDOS £45, Timeworks DTP (MSDOS) £40. Tel. (0232) 457687 after 6pm.

- WANTED: Four slot backplane for the Archimedes 310 (with fan), Hand scanner and Impression II. Tel. (0332) 557751.

- Pace Nightingale "manual" modem with leads for BBC Master and Acorn A3000 £10, Hearsay version 1 (non-multitasking), complete, boxed £10, ArcComm2 (logotron), complete, boxed £25. Tel. (0493) 740557 eves.

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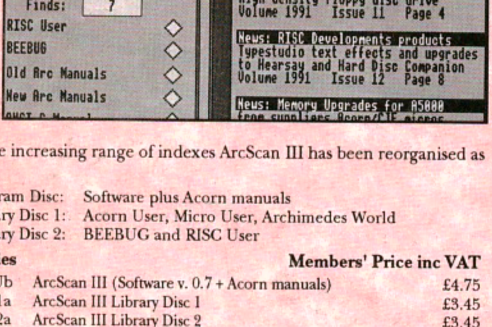

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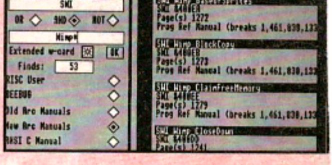

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